LAST MINUTE
OIL NEWS SECTION

News By Teletype from 4 News Bureaus

National Petroleum News

News From Oil Industry Everywhere

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Dealers Organize To Enforce Mich. Fair Trade Law

DETROIT, July 27.—Gasoline dealers in Michigan may not undersell any competitor with intent to do injury, sell below cost, offer premiums or give secret rebates to customers. Such are the stipulations of Michigan's new fair trade practice law, effective July 23, when signed by Governor Frank G. Murphy.

The law provides maximum penalties of one year's imprisonment or $5000 fine or both, and further provides that the state attorney general, upon the third violation by any corporation of any provision of the act, may institute proceedings to permanently enjoin it from transacting business in the state.

Duncan C. McCrea, prosecuting attorney for Wayne county (Detroit), sent registered letters to 52 gasoline dealers in the Detroit area, warning them that their methods of operation may be judged in violation of the new law, and giving them until today to discontinue their practices. Among these potential violators were those who offered premiums, discounts, rebates, and who sold below the normal price and below cost in their districts.

On July 26 1400 gasoline dealers meet at the Fort Wayne Hotel here and heard two county prosecuting attorneys give their interpretations of the new law. The meeting was sponsored by the Retail Gasoline Dealers Assn. of Michigan, Inc., which was instrumental in drawing up the original fair trade practice bill.

Compliance

Rankin P. Peck, former state oil code administrator and now secretary of the dealers' association, will direct enforcement of the law.

"Our first step will be to warn violators," Peck said. "Members of the association will report their complaints to the central headquarters in Detroit. The matter will be turned

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Catch Motorists Too In Tax Evasion Net

NEW YORK July 27.—Not only is Tennessee "laying it on thick" on the gasoline tax evader, but now it is serving 500 motorists with bills for taxes not paid on gasoline they purchased.

The Tennessee Department of Finance and Taxation found that for some time a gasoline dealer had been operating in Arkansas just across the state line, delivering gasoline tax-free to Memphis motorists in five and 10 gallon lots. With Tennessee's gasoline tax of 7 cents per gallon, almost twice as high as the average state tax for the country, a motorist would save 70 cents on a 10-gallon purchase.

The state has amended its gasoline tax law to extend liability for tax payment to every person involved in evasion. A list of customers was obtained from this Arkansas bootlegger and the Tennessee authorities are now pressing the motorists for evaded taxes, said to total more than $9000.

How About Alky-Gas?

WASHINGTON, July 26.—Strict interpretation of a recently issued Internal Revenue Bureau regulation would require every filling station operator and attendant in the country to inquire of every purchaser or prospective purchaser of radiator alcohol:

"Sure you're not going to drink this?"

Maybe the T-Men won't check up this close on all sales of denatured alcohol, but it behooves a service station operator to at least lift his eyebrows if a repeat customer should, day after day, purchase gallons upon gallons of radiator fluid.

The regulation is aimed at so-called alcohol cleaners who, by taking the denaturant out of denatured alcohol, manufacture, free of federal tax, alcohol suitable for beverage purposes.

New Laws to Stop 'Abuses' Hinted at State Oil Probe

By Telegraph

PHILADELPHIA, July 27.—Legislative proposals that may develop from hearings of the Pennsylvania Oil Industry Investigation Commission were indicated today by Judge Ralph A. Smith of Pittsburgh, chairman. Hearings of the commission resumed here July 26.

A state grading law, classifying gasoline by specifications regardless of brand name, might solve some of the abuses of which some retailer witnesses complained, Judge Smith suggested.

These alleged abuses include "swapping" of gasoline among major companies, making the consumer pay for national advertising campaigns which publicize brand names and widespread variance of prices in different parts of the state.

Judge Smith said also it had been suggested that the commission recommend that the state go into the gasoline business in a manner similar to its present state liquor stores. He did not say how much consideration had been given such a suggestion, however.

Another suggestion made to the commission was that it recommend laws for licensing of refiners, producers, and marketers, and set an arbitrary "margin" of profit under which they are to operate. This in effect, would be regulation as a public utility.

Questioned on "Swaps"

Questioned as to the "swapping" charges, E. H. Collins, manager of the Standard Oil Co. of Pennsylvania, said his company gets gasoline from other major companies, but that it is made to Standard's specifications.

"We are particular as to volatility, octane rating, and other factors, and there's a special solvent oil which goes into Esso and Essolene which, we think, makes it distinctive," he said, adding that these specifications

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Iowa Plan Restores Something Lost When Livery Stable Era Passed, Writes Ellick Botts

To the Editor:

Traveling about the country, as I have been doing lately, I could not help picking up some observations about the oil business and it occurred to me that you would be interested in having some of my mature reflections.

While it may seem a little foreign to my main line, which is the practical side of pumping oil wells, I venture to present a thought on marketing. In so doing I speak, of course, as a layman, but I believe the layman's viewpoint is sometimes of value to the technician, or don't you think so?

What I chiefly noticed in touring about through several states was the effect which the so-called Iowa Plan has had on community life. As most of your readers know, this is the system under which the owner of a filling station gets sick and tired of the thing and leases it out to the head attendant or to a cousin on the wife's side.

The owner is then free of all

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Ellick Botts, consulting pumper of Gray Horse, Okla., is a valued contributor to NATIONAL PETROLEUM NEWS, now widely known in the southwest because he writes principally from his own locale, and concerning matters of chief interest in the Mid-Continent.

However, in this case, Mr. Botts has gone afield, both geographically and in his subject matter, and he writes of a matter close to marketers and refiners—service stations as run today.—Editor.

Amendment of Profits Tax To be Pushed by Van Nuys

N. P. N. News Bureau

WASHINGTON, July 26.—Senator Frederick Van Nuys, Indiana, is putting the finishing touches on his bill to amend the undistributed profits tax so that it will not bear so heavily on small business enterprises. He will propose credits for earnings used for certain purposes.

On the House side, Congressman Emanuel Celler, New York, has introduced a comprehensive bill to eliminate the "major imperfections" of this much-criticized provision in the 1936 revenue law, but there is no such comprehensive bill pending in the senate.

Senator Van Nuys plans to introduce his bill in a few days, but he has little hope that anything can be accomplished at this session of Congress. However, he will strive to get it on the Senate calendar for early action when Congress returns in January.

Court Fight Jammed Mill

Meanwhile, it is expected that the widespread resentment against this tax will continue to grow. In recent months, Congress has been flooded with protests from small businessmen of all kinds, including many independent oil jobbers, who have written to their senators and congressmen asking relief from this "iniquitable tax."

But the fight precipitated by President Roosevelt's proposal to "pack" the U. S. Supreme Court tied Congress in a knot for more than five months. There has been no chance to get through any remedial tax legislation. Indeed, Congress has not yet passed some of the appropriation bills for the current fiscal year which began July 1.

Attacks Tax

The only chance of getting through some changes in the profits tax now is to tack an amendment on the legislation to plug up alleged loopholes in the revenue laws which the Roosevelt Administration is pressing for before Congress adjourns.

Senator Van Nuys, who braved White House disfavor in denouncing the President's court-packing plan is not hesitating to attack the objectionable features of the undistributed profits tax.

Jobbers Ask Tax Relief

Following receipt of a resolution adopted by the Indiana Independent Petroleum Assn. condemning the undistributed profits tax, Senator Van Nuys announced that he would sponsor legislation to provide the oil jobbers with the tax relief sought.

"This tax has been a heavy burden on all business but small business especially," Senator Van Nuys told NATIONAL PETROLEUM NEWS. "If allowed to continue unchanged, it will cripple our whole industrial structure.

"Many of the big corporations have built up, over a period of years, huge surpluses," he added. "This tax hasn't affected them so much now. If they need additional working capital after distributing their profits, the big corporations can borrow or float a new stock issue.

"But the little businessman cannot get additional capital so easily," he pointed out. "He must either retain his earnings —and be penalized under this undistributed profits tax — or else go to the banks and then be penalized in future years when he uses his earnings to pay off the loan.

"That is one of the most objectionable features of this tax as it now stands, and I propose to remedy it in my bill by allowing a credit for earnings used to pay off indebtedness," the Indianan declared.

General Credit Allowed

Every corporation, particularly the small ones, should be allowed to put aside some of their earnings for a "rainy day"; it is just plain common sense to do so, he said. So, the Van Nuys bill will include provision for a general credit—that is, it will amend the tax law so that a corporation can retain a certain percentage of its earnings without paying the surtax.

"In my bill," Senator Van Nuys said, "there will be a provision granting credits for earnings used for expansion of plant facilities, improvements, modernization of equipment and other such items. I believe that this will accelerate recovery by providing additional re-employment."

Iowa Plan Restores Something Lost When Livery Stable Era Passed

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responsibility except that of seeing that the taxes are paid, the place painted up, the driveways repaired, ice kept in the water cooler and paper towels in the washrooms. There are other details that the lessor must attend to, but these items will serve as a rough idea.

Now, nearly all the stations into which you drive today are being run on this Iowa Plan and a great transformation has occurred. Formerly they were cold, impersonal places where you just drove in and got your gasoline and oil, water and air. The attendants serviced your car and you went on your way. They didn't seem to care anything about a report on conditions over the country and the customer's political views interested them not. When they weren't busy with their clients they were fussing around with a hose, sluicing off the drive or doing some other chore. There was little of the homey atmosphere around the place.

This deplorable condition has been changed. At any of the stations I found that it had become a sort of community center where local wits and philosophers congregate and the girl friends of the young men attendants provide the touch of refinement that keeps the funmaking within proper bounds. Many of the stations are provided with radios so that the patrons and the larger crowd of visitors can keep abreast of the baseball situation and the radio certainly has been of value in bringing in the people.

One Iowa Plan man told me that his station had never been so popular when it was under the management of the company that owns it and that, while his sales had dropped since he put in his radio on account of tourists going past, there had been a big gain in all around amusement and side-splitting comedy.

The tourists, for some reason that baffles this man, seem to prefer a station farther down the street where nothing goes on from morning until closing time except the sale of "gas" and oil. The proprietor of this station is an old mossback who doesn't know Carl Hubbell from Joe Lewis and, to the time I was in that town, had not expressed himself to a single customer concerning the Supreme Court business.

The proprietor of the more popular place, however, takes it all in his stride and manages to offset his losses some through his slot machines, although he is pretty bitter over the small cut that the racketeers who own the machines give him as his share. He looks forward to better times and says that, if the bank will see it his way and let him have that loan, he will make it through the year nicely. He has some other plans for business boosting, including a slot machine piano and a weighing machine. He had to discontinue his hamburger counter because of too much trade on the cuff among his friends.

One advantage of the modern way of running a filling station has been generally overlooked. Law enforcement agents, such as G men, etc., would do well to canvass Iowa Plan stations when in search of clues to fugitives who are escaping in cars. For you certainly get a thorough looking-over at stations which cater to the pedestrian trade. Nothing about you or your car eludes their notice and, in my case, there was occasional audible comment, as my car belongs to a nearly forgotten era and is really worthy of comment.

All in all, I have concluded that something that we lost with the passing of the livery stable and the decline of the pool hall has been restored through the Iowa Plan. I did have a moment of panic at one station on July 4 when they started shooting fireworks near my "gas" tank while I was taking on a few gallons; but the head man assured me they had been at it all day and no cars had yet blown up. And that was more than compensated for by seeing the station itself take fire.

Yours,
Ellick Botts,
Consulting Pumper
Gray Horse, Okla.

State Inspects Books

LOS ANGELES, July 26.—Los Angeles Superior Court today issued an order permitting inspection of records of ten defendant service station operators charged with selling below cost. The suit was brought by Retail Petroleum Dealers Assn. under California Unfair Practices Act.

Panama Vessels Not Tankers

WASHINGTON, July 26. — The three vessels under construction at Bethlehem Shipbuilding Co.'s yards for the Panama Railroad Co. are not tankers, as reported in NATIONAL PETROLEUM NEWS of July 14, but combination freight and passenger vessels. The Commerce Department report from which the N.P.N. story was written listed them as tankers, but later found they should have been listed "combination freight and passenger."

Divorcement Bill Soon to be Law, Biermann States

By Teletype
N. P. N. News Bureau

WASHINGTON, July 27.—Congressman Fred M. Biermann, Iowa, predicted yesterday that his marketing-divorcement bill, or some similar measure to make oil marketing stand on its own feet, will soon become law.

This opinion was expressed in a statement explaining the purposes of his divorcement bill which Biermann inserted in the Congressional Record for July 26. If enacted, this bill would forbid any oil company engaged in production, refining or transportation of petroleum products from also engaging in marketing.

He likened his bill to the Hepburn Act of 30 years ago, which divorced the railroads from the business of mining coal, and to a consent decree in an anti-trust suit by which meat packers withdrew from retailing.

Biermann quoted from letters praising his bill, received from independent oil jobbers and from Paul E. Hadlick, secretary of the National Oil Marketers Assn.

'Won't Hurt Majors'

"The so-called Connally 'hot oil' act had for one of its principal purposes the stopping of cut-throat competition among the producers of petroleum products," Biermann said. "My bill has for its purpose the stopping of subsidized competition in the marketing field.

"The big major oil companies have been using their marketing properties as dumping grounds for their production and refining departments. They appear to be content to take heavy losses in marketing in order to be assured of an outlet. This practice jeopardizes the very existence of thousands upon thousands of independent oil marketers, whose business must stand upon its own feet."

Like Connally Act

Biermann declares that this legislation would help the independent oil marketer and the million employes in oil marketing without harming the major oil companies except "to turn their marketing operations loose and make them stand on their own legs.

"I believe that HR-7800 should pass Congress without a dissenting vote," Biermann concluded. "If it was right for the Connally act to rid the producers and refiners of cut-throat competition it is right that my bill should rid the marketers of cut-throat competition."

Tracksides Meet Cut

AKRON, O., July 26.—Trackside or "tank car-to-you" stations cut prices in the Akron area last week to meet the tank wagon drop initiated by Standard Oil Co. of Ohio.

The drop of one cent in trackside retail price to 16.5 cents maintained the 1.5 cents differential under company-operated stations of Standard Oil. Sohio dropped the price one cent July 19 because of diversion to trackside stations, A. A. Stambaugh, sales manager said.

The price structure is now as follows:

Lessees and dealers ..18.5 cents
Sohio company stations ...
.....18.0 cents
Tracksides .....16.5 cents

Crude Price Cut In Kansas Pools

By Teletype
N. P. N. News Bureau

TULSA, July 27. — Effective Aug. 1, Stanolind Crude Oil Purchasing Co. will discontinue paying posted prices for crude in the Otis and Albert pools of Rush and Barton Counties, Kans., and will pay 13 cents a barrel below the posted prices of Kansas crude.

Posted prices for Kansas crude now range from $1.06 for below 29 gravity oil to $1.30 for top grade of 40 and above, with 2-cent differential for each grade between. New prices for Otis-Albert will be 13 cents below these.

The Stanolind explained its reduction in these pools with this statement:

"The oil purchased by this company in the Otis and Albert pools, in Rush and Barton Counties, Kans., is now being paid for at our regular Kansas prices. The oil is gathered by us from lease tanks; piped through a loading rack and shipped in tank cars to a pipeline reception point, the expense of which is absorbed by this company.

"Being forced to store oil because its production has been maintained by various states in the Mid-Continent area at a rate in excess of the consumptive demand, we are unable to continue purchasing oil at our regular Kansas prices and absorb the freight and other costs; therefore, commencing Aug. 1, 1937, we will pay 13 cents per barrel under the regular Kansas prices for oil purchased in the above pools."

The price reduction will affect about 600 barrels of oil a day.

Committees Okay Oil Compact as Term Nears End

By Teletype
N. P. N. News Bureau

WASHINGTON, July 27. — Resolutions approving a two-year extension of the interstate oil compact today were well on their way toward adoption by Congress. In both the Senate and House, the respective committees have voted favorable reports on the compact resolutions.

President Roosevelt July 22 sent a special message to Congress transmitting the oil compact which has been ratified for another two years by Texas, Oklahoma, New Mexico, Kansas, Colorado and Illinois. The President expressed the hope Congress would approve the compact, citing the opinion of Interior Secretary Harold L. Ickes that "some good may be accomplished", by it.

Senator Elmer Thomas, Oklahoma, and Congressmen William P. Cole, Jr., Maryland, and Lyle H. Boren, Oklahoma, sponsored the compact legislation in the Senate and House respectively. Cole is writing the committee report, although Boren's name will be on the resolution.

Some friends of the oil compact predicted it would meet "stiff opposition" from a group of marketers, but so far there has been no sign of this. No hearings were held by either the Senate or House committees.

Of course, there is the chance the compact resolution may get shunted aside in Congress' race to adjourn. Unless the two-year extension is approved by Congress, the compact dies Sept. 1.

Tideland Development An Issue Again

N. P. N. News Bureau

LOS ANGELES, July 26. — Possibility that tideland development in California may be altered in special session of the state legislature was seen here today as state officials investigated drilling in the Long Beach-Los Angeles harbor area.

The possibility was based in part on a statement of Governor Frank R. Merriam that he was not satisfied with present legislation governing oil development on state tidelands.

The state turned over to cities of Los Angeles and Long Beach its sovereign rights on the harbors before passage of a law which retains for the state all mineral rights in such lands. Officials of the two cities maintained the state has no interest in the tidelands covered by the original grant.

The question of mineral ownership has become of vital interest since proposals for additional development of shore lands in the Long Beach-Los Angeles harbor area have been made as a result of extensions of the Wilmington field.

Unconfirmed reports here said a referendum action had been started against the O'Donnell law, effective Aug. 27, which provides that a state oil and gas commission would decide the method of drilling the offshore Huntington Beach pool. This law has the opposition for sponsors of the Olson measure, which would have permitted drilling from piers or groins built out over the water.

1936 Asphalt Output Over 4,000,000 Tons

N. P. N. News Bureau

WASHINGTON, July 26.—U. S. refineries produced 4,065,622 short tons of asphalt in 1936, compared with an output of 3,287,003 tons in 1935, according to the Bureau of Mines, a gain of about 13 per cent.

At the same time, stocks of asphalt held at refineries were reduced from 429,739 tons on Dec. 31, 1935, to 364,199 tons on Dec. 31, 1936. Imports of asphalt and bitumen decreased from 53,972 tons in 1935 to 21,598 tons in 1936, and exports of petroleum asphalt decreased from 222,825 tons in 1935 to 190,503 tons in 1936.

The bureau reports the indicated domestic demand for asphalt in 1936 was 3,962,257 tons, compared with 3,027,648 in 1935. The 1936 demand established a new record, according to the bureau.

Clay County (Ill.) Well Flows 1392 Bbls.

TULSA, July 24.—Wiser Oil Co.'s first well in the Clay County, Ill. development came in yesterday for initial production of 880 barrels in 15 hours, flowing through 2½ inch tubing, according to reports received here. This well extends the Weiler pool, opened several weeks ago by Pure Oil Co., three-fourths of a mile north.

The well found the top of the pay at 2961 feet and was drilled to total depth of 2976. It is located in the SW SE NE of 28-3n-8e. Wiser has made location for the east offset and Pure Oil will offset to the south and the southeast.

Kettering Visions Motor Cars And Highways of the Future

N. P. N. News Bureau

CLEVELAND, July 26.—Predictions on motor vehicles, the fuels they will require, and highways of the future were presented before the American Society of Civil Engineers in Detroit last week by Charles F. Kettering, vice president of General Motors Corp. in charge of research.

His predictions were based on responses to a questionnaire sent automotive research men, rubber manufacturers, oil men, safety engineers, lighting equipment manufacturers, economists and the like. The questions themselves asked opinions on solution of present problems, which solutions will determine the type of highways and vehicles of the future.

No Parking

"It is inconceivable that we shall long continue to park cars almost bumper to bumper along busy city streets and suffer the damage and inconvenience which results," Kettering said. "We could almost double the traffic capacity of our present city street system by eliminating parking and using the streets for travel only as they should be used."

He cited the possibility of municipal parking lots and buildings equipped with sufficient garage spaces for their tenants.

Co-existent with this problem he said is that of constructing inter-city highways—and super highways in cities—to move traffic at an average faster speed. "Let us concentrate our efforts on the worst of problems," Kettering said in concluding his address. "Solve first the means of handling traffic on our most congested routes. Build our main streets to handle their traffic faster and with greater safety. Instead of trying to do everything at once we should solve the most pressing problems first. If this is done in a systematic way our highway system will be the best in the world in a few years.

A Planned System

"Men in the automobile industry believe that we should have a highway system, based on traffic surveys to determine requirements, which would be made up of types of roads designed to carry traffic safely. Such a plan would require a primary system of high speed highways crossing the country in all directions. It is estimated that about 50,000 to 60,000 miles of such super highways would be sufficient. Leading from these would be a secondary system of good highways serving small cities and towns. The third system would consist of land surface highways serving rural areas. In addition to these, we need a similar system, in miniature, to carry the traffic to our large cities.

"The high type of road should embody all the knowledge the highway engineer has on building a safe roadway to carry motor vehicles at a reasonably high speed. Where it is necessary, it should be above or below the ground. In any event, it should be a limited access "free way" designed for the one purpose of carrying traffic smoothly. "Where roads do lead into it, they should be provided with accelerating lanes, so traffic will not be interrupted by new vehicles entering the highway. Everything should be done to make for a free, uninterrupted flow of traffic. Crossings should be eliminated, curves should be banked, long sight distances should be provided, bridges should be wide and all bottlenecks eliminated. Traffic lanes should be separated to eliminate side swipes and head-on collisions. Surfaces should be non-skid. Where it is necessary, adequate signals and signs should be installed. The whole system should be governed by a uniform set of traffic regulations made to fit the new conditions."

So interesting and important to oil men are Kettering's observations as to motor cars and highways of the future that the text of his paper before the civil engineers' society will be published in the next issue of NATIONAL PETROLEUM NEWS.

Tanker Is Launched

NEW YORK, July 26.—The S. S. Esso Bayonne, first of eight new oil tankers in a $13,000,000 building program inaugurated last year by the Standard Oil Co. of New Jersey, was launched July 24 at the works of the Federal Shipbuilding and Dry Dock Co., Kearney, N. J.

Designed to carry over 4,400,000 gallons of gasoline or oil, the vessel is an oil burner 450 feet long, has a deadweight of 12,000 tons, will have a speed of 12 knots, and will operate at an efficiency 20 to 40 per cent greater than most tankers today, it is said.

Phillips Six Mos. Gain Up 72%

NEW YORK, July 26.—Phillips Petroleum Co. finished the first six months with a gain of 72% in net profits as compared with the same period a year ago. Its gross income, excluding intercompany transactions, gained 20%.

Net production of crude oil for the company is near 70,000 barrels daily, an increase of slightly more than 30% over a year ago, and at a new high record.

Phillips Petroleum Co. and subsidiaries reported for six months ended June 30, 1937, net profit of $12,679,080 after federal income taxes, interest, depreciation and depletion, equivalent to $2.85 a share on 4,449,052 shares of capital stock. No mention was made of any provision for federal surtax on undistributed profits.

This compares with $7,336,302, or $1.77 a share, on 4,153,234 shares in the first half of 1936.

For quarter ended June 30 indicated net profit was $7,063,443, equal to $1.59 a share on 4,449,052 shares, compared with $5,615,637, or $1.26 a share, on 4,449,052 shares in preceding quarter and $4,180,143, or $1.01 a share, on 4,153,234 shares in June quarter of previous year.

Consolidated income account for six months ended June 30, 1937, compares as follows:

	1937	1936
Gross	$58,957,417	$49,413,068
Exp. fed. in. tax & in.	38,229,190	34,426,808
Profit	$20,728,227	$14,986,260
Depr. & Depl.	8,049,147	7,649,958
Net profit	$12,679,080	$7,336,302

Services for Pennzoil Manager

NEWCOMERSTOWN, O., July 22.—Funeral services were held here today for George Balch, 40, assistant Ohio sales manager for 8 years for the Pennzoil Co. He died July 19 of a heart ailment. Prior to his association with Pennzoil, Mr. Balch was with Standard Oil Co. of Ohio for 6 years.

Government Asks For Truck Bids On Next Quarter

N. P. N, News Bureau

WASHINGTON, July 26. — Prices for deliveries by motor tank trucks and trailers as well as railway tank cars are asked for by the Treasury Procurement Division in its bid invitations for supplying the government's requirements of fuel oil and gasoline during the October-December quarter.

Government agencies will have the choice, where such contracts are made, of ordering deliveries by truck train or railway tank car, depending on which method of delivery is most advantageous from the standpoint of cost and handling facilities.

Truck deliveries of "tank car" shipments were called for for the first time in the July-September bids and several contracts were awarded wherein the ordering agency has the choice of truck or rail deliveries. Officials of the TPD were satisfied that truck deliveries offered opportunities of saving money as well as added convenience, so it was decided to ask for truck-delivery bids for the October-December period.

These truck deliveries of "tank car" shipments are entirely separate from the ordinary tank wagon delivery items.

Truck Rates For Government

Incidentally, the Interstate Commerce Commission has just ruled that for-hire truckers operating as common carriers may quote to the government any rate they want, regardless of the tariffs they have established. In other words, there is nothing in the Motor Carrier Act which "prevents the carriage, storage or handling of property free or at reduced rates for the U. S., State or municipal governments by common carriers or by motor vehicle."

The TPD has scheduled bid openings for tank car (and transport truck) and tank wagon delivery of fuel oil and gasoline needed by federal agencies during the October-December quarter, as follows:

Gasoline	Region	Fuel Oil
Aug. 2	1 (East)	Aug. 12
Aug. 2	2 (Southeast)	Aug. 12
Aug. 9	3 (Midwest)	Aug. 12
Aug. 5	4 (Southwest)	Aug. 16
Aug. 9	5 (Rocky Mts.)	Aug. 19
Aug. 5	6 (West Coast)	Aug. 16

The Jones Boys Conclude a Deal

N. P. N. News Bureau

CLEVELAND, July 27. — A memorandum was signed today between six oil marketers in Portage County and Local No. 628 of the International Brotherhood of Teamsters, Chauffeurs, Stablemen & Helpers Union, A. F. of L. affiliate, providing a top wage of $120 per month for petroleum truck drivers.

The agreement is similar to that drawn for other rural counties in Ohio. A 44-hour week, one week vacation with pay, and no deliveries on Sundays or holidays except in cases of emergency are also stipulated.

Present hours and wages of drivers have averaged about 60 hours a week for $100 per month, some jobbers estimated. One effect of the higher wage costs, they said, would be to curtail small dumps to farmers direct by tank truck.

The agreement resulted from negotiations at Kent, O., among the following Jones: Al Jones, business agent for Local No. 628; C. R. Jones of C. R. Jones & Son, Pennzoil distributor; R. R. (Casey) Jones, Ravenna (O.) manager for Hickox Oil Co.; Leroy Jones, Ravenna manager for Canfield Oil Co. and representatives of Shell Petroleum Corp., Sinclair Refining Co. and Ravenna Oil Co.

The wage demands caught companies here between two fires as the tank wagon price dropped one cent last week in seven townships of Portage County.

A union demand for a closed shop was rejected by the companies. Complete scale in the agreement provided $110 per month for drivers employed one year or less; $115 for one to two years, and $120 thereafter, with no cuts for drivers now earning in excess of these amounts.

Issue is 'Recognition Vs. Responsibility'

DETROIT, July 26.—In recent general trucking strikes in Michigan and Nebraska operations of petroleum transporters were not affected, according to the Petroleum Transport Association.

In Michigan, where trucking labor difficulties have been more recent, petroleum transporters have worked on existing agreements. As a general rule wages for petroleum transport drivers are as high or higher than union demands. The trouble in Michigan, according to reports, turned on "recognition versus responsibility." Companies are slow to meet demand for recognition without assurance of union responsibility.

In Nebraska, where truckers were tied up from ten days to two weeks, petroleum haulers operated before settlement. The union in that state is an A. F. of L. affiliate, while a C. I. O. affiliate is demanding recognition in Michigan.

Shell, Union Deadlock

LOS ANGELES, July 27.—Negotiations between the Shell Petroleum Corp. and International Assn. of Oil Field, Gas Well & Refinery Workers of America entered the third week today with no agreement in sight.

Negotiations have been in progress since the National Labor Relations Board ordered the company to meet with five C. I. O. and A. F. of L. unions rather than an independent union the board said was company dominated.

Socony-Vacuum Keeps Own Pension Plan

NEW YORK, July 23.—The Socony-Vacuum Oil Co., Inc., will continue its own pension and insurance plan during 1938 and 1939, along with the requirements of the federal Social Security Act, John A. Brown, president, said today.

The company's plan, started 34 years ago, is paid for partly by the company and partly by employes. Brown stated that both the company and the employes received more for their money under their plan and that any change after 1939 would consider laws as they are then.

"It is hoped that as a result of study the government plan will be modified so that the payments which it requires will not be increased after 1939, and so that it will be placed upon a 'pay-as-you-go' basis rather than the present system of trying to build a huge reserve, Brown said.

S. O. Ohio's Plan

"It is the desire of the management that the company plan will never be modified to any greater extent than to make it supplementary to the federal Social Security Act, Brown added.

Standard Oil Co. of Ohio recently placed its pension plan on a voluntary basis after younger employes complained of duplication with the Social Security Act.

Officials Probe Pure Oil Blaze

N. P. N. News Bureau

NEW YORK, July 27.—Investigation of the fire July 16 at the Pure Oil Co.'s bulk plant, Atlantic City, N. J., was in progress today, but no report has yet been made, Pure Oil offices said.

Fire Chief Joseph B. Leeds of Atlantic City said he had not determined the cause of the fire. Pure Oil officials said they had learned the fire started in the rear of the plant at or near the pump house.

The fire and explosion took place at the height of the summer resort season and attracted a huge crowd. Numerous bystanders were trampled and bruised in the rush to get away from the scene, following the explosion of a 10,000-gallon tank.

It was reported at Pure's Chicago office yesterday that eye witnesses first noticed the flames near the adjoining fence of the A & P Coal Co., owners of the bulk plant which was leased to Pure.

$18,000 Loss

The bulk plant was relatively small, having three tanks with a total of 53,000 gallons capacity. Two of the tanks were filled with gasoline; the other with kerosine. All storage was lost. An adjoining warehouse and its contents were destroyed. Company officials estimated that the total loss at the bulk plant was under $15,000, with an estimated damage of $3000 to adjoining property.

Without the use of chemicals, the fire was subdued within three hours. It was understood that the use of water, and later sand, brought the fire under control.

Virtually all of the injured who required hospitalization were police or firemen. Four of the firemen suffered severe burns.

Sohio Writes Policy, But Not Contract

CLEVELAND, July 26.—William T. Holliday, president of the Standard Oil Co. of Ohio, has sent a notice to employes of the company that the Sohio pension plan will now be on a voluntary basis. This is the latest of a series of statements of company policy which have served in lieu of signed agreements with the Assn. of Petroleum Workers of the Standard Oil Co. of Ohio, independent union.

Younger employes had complained that the pension plan duplicated the benefits under the Social Security Act, said Howell H. McCowen, of Cincinnati, president of the union. Since meeting with representatives of the union, McCowen said, the company has also granted extended vacations for those of long service, eliminated docking of service station men when unavoidably absent from work, seniority stipulations and recognition of the association as a bargaining agent.

A number of minor grievances were also adjusted with the management. The company has also reinstated its policy of paying one-half of the tuition of employes attending night schools.

T. W. Price Advanced By Socony-Vacuum

KANSAS CITY, July 27.—Consumer tank wagon prices of gasoline and kerosine at depressed points in Kansas and western Missouri will be advanced 0.5 cent a gallon July 28 by Socony-Vacuum Oil Co., Inc., White Eagle Division. Tractor fuel prices also will be advanced at many points in this area.

In announcing the advance, Socony-Vacuum officials said the change was made "because of unreasonably local markets at many points," in the affected area.

Pump Makers Merge

WICHITA, Kan., July 27.—Consolidation under new management of the Clear Vision Pump Co. and the Hayes Equipment Mfg. Co. was announced recently. Headquarters and factory will be at 624 East Gilbert St., Wichita, according to the news bulletin of the Gasoline Pump Manufacturers Assn., New York.

Officers of the new organization are: Dr. D. I. Maggard, chairman of the board; J. T. Cronkhite, president; Roy Streeter, vice-president; A. F. McMaster, secretary-treasurer; and J. C. Riggs, sales manager.

Richfield Directors

LOS ANGELES, July 24. — In a change in directorate of Richfield Oil Corp., announced today, Temple W. Tutwiler, Herbert B. Straight and Harry F. Sinclair, Jr., were elected to succeed F. R. Coates, Richard W. Millar and Francis Baer, resigned.

Tutwiler and Straight are also directors of Cities Service Co. and Sinclair is associated with Consolidated Oil Corp.

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Independent Gasoline Brands Are Industry's Best Aid

By WARREN C. PLATT, Editor

Is the private brand of the individual jobber on the way back?

That thought is suggested by the recent plans for joining the jobbers under co-operative merchandising plans and yet leaving the jobber free to pick his own brand. The latest of these is the effort of Wisconsin jobbers to group behind a service selling plan and yet each sell his own or, if he wants to, some Independent refiner's brand of gasoline.

When the automobile owners began traveling long distances years ago the Independent jobbers did not get together quickly or intelligently enough to furnish common means of identification to their stations so that the tourist could easily pick out the good stations from the poor ones.

The national brands of the larger companies presented a stronger appeal to jobber and automobile owner alike. The national brands gave the jobber education in the sales and station supervision that he needed as a class and it permitted advertising on a national scale of a quality of advertising copy beyond the immediate abilities of the individual jobber.

Also the national gasoline brand meant control of its gasoline output by the larger refiner, a most desirable thing at the time, when the refiner had failed in his efforts to understand and work with the tank car market and the buyers in that market.

But there always have been and probably always will be some men in this world who like to be their own bosses and sail under their own flags. Some of the outstanding leaders in gasoline marketing have been such men. In the past these old Independent jobbers have outsold the major companies time and time again, that is, sold a better service at a higher price and oftentimes sold a better quality of gasoline.

Today there are many oil jobbers, especially in the middle west, who are making a real success of running their own business and selling under their own brands. They are the ones who have that extra ability to manage money and men; to build and maintain good looking and efficient stations; to think out and promote good sales ideas. They are not the type of men who need the detailed supervision and constant pushing that so many people in this world need.

These Independent jobbers with their private brands are relatively few in number and distribute but a small portion of the gasoline gallonage, only some 5% of the total in the Standard of Indiana territory, says the government in the case at Madison, Wis. But this small group of jobbers lives on and prospers. They help maintain a few small and good refineries. They are the ones who make the open spot tank car market, which the vast majority of jobbers and the major oil companies long since forsook.

Years ago these Independent jobbers began co-operating under common merchandising plans such as the Dixie group. This Dixie group has grown to large proportions, particularly considering that its promotion was all voluntary. Some jobbers still use the old Red Hat master brand of the old national jobbers association developed by L. V. Nicholas. Since have come other merchandising groups. And now the "Auto Port" group is being organized in Wisconsin.

These groups serve to strengthen the Independent jobber with the private brand, in his merchandising efforts and to present him in a more favorable light to the buying public. These groups tend to eliminate by education the dirty and dinky Independent station that has not been painted for years and which puts the curse on the private brands of the smaller oil companies.

We have always believed, and we believe it more strongly than ever in these troublesome political days, that the oil industry is better off with a healthy number of aggressive, good looking, Independent, private gasoline brands. They are the best evidence of the existence of competition. They are also the best protection for an industry against political attack, because the virile small business man will put up a far more effective fight against government control of his business than a big company can. Furthermore, he has friends in his home district who will fight for him long before they will raise a finger for a large company, even though they may be stockholders in the latter.

The public will never feel fear of any oppression from a few thousand strong but small businesses as it will from a hundred big companies, no matter how bitterly the big companies may fight each other.

If the oil industry desires a healthy and fair tank car market, it will cultivate the small Independent jobber and do all it can to make him grow in strength and in numbers, even though it means the sale of a few less gallons of gasoline under some much radioed and Saturday-Evening-Posted gasoline brand. And the industry and the major oil companies will make far more money in the main by so doing. The Independent private brand jobber should be aided in re-establishing himself in the oil industry, because he will prove to be one of the best assets the oil industry has and he will prove himself to be one of the best aids to maintaining a free and Independent American business.

Government Stifles Thinking

The railroads certainly are paying heavily enough for their third of a century of government regulation. They slept under the political caress, dreaming that they were safe from competition and that the government would see to it that they did not indulge in unprofitable "unfair practices" against each other and that their rates were kept high enough to let them live.

While the roads dreamed thus, other means of transportation developed. Thanks to the high rates that the roads maintained on oil, undoubtedly to protect their largest shippers, the roads have lost to truck, barge, tanker and pipeline most of the oil business. Since that business has gone they have been frantically getting their, or the government's, fingers on these means of moving merchandise so they would not harm the roads so much. But the high rates of old still obtain on petroleum and its products.

Now a small group of refiners in the Mid-Continent announce plans for construction of another gasoline pipeline to the big consuming markets up north. That means more business that will be lost to the railroads.

Government control and regulation seems to stifle an industry's thinking and doing.

More Laws Seen As State Probes Pa. Oil Industry

(*Continued from page 9*)

must be met when gasoline is taken from sources outside of Standard of Pennsylvania's regular suppliers.

"Contracts" Described

A system of contracts whereby about 3000 customers of a western Pennsylvania retailer secure discounts off posted price despite the new state price posting law for motor fuels, which went into effect July 1, was described to the commission at its sessions Monday.

The retailer, Fred J. Fournier of Wilkinsburg, said his station managers (he has five stations) solicited the customers to sign the contracts, all of them executed before July 1, which allow them to purchase motor fuel at two to three cents off posted price, depending on the locality.

An attempt was made by Judge Smith to show that some of the contracts had been executed after the law went into effect, although the agreements under which they were made were arrived at previous to that date, but Fournier declared all of them were drawn before the law became effective, hence were not touched by the law, which prohibits any deviation from the posted price. It is aimed at under-canopy cuts, primarily.

If a customer with a contract forgets his identification card and comes to one of the Fournier stations and seeks a discount, he is asked to sign an affidavit that he has a contract and is given the discount, Fournier testified. Most of these affidavits haven't been checked back to see if the signer has a contract, Fournier said.

However, in three instances where the signer of an affidavit was found not to have a contract, the operator of the station where he signed the affidavit has been instructed not to sell him gasoline at a discount any more, he continued.

"Must Make Concessions"

Fournier declared he felt "a little dealer is compelled to offer some sort of a concession to build a business," but added that heretofore when a "little dealer" has done that, and built up a good trade, the major oil companies have come in, because they "thought he was getting too much" and cut prices to the point where he couldn't afford to give the concession.

At this point Judge Smith asked Fournier if it was his belief that the major companies start most of the local price wars, and the witness agreed that such was his belief.

Most of his present contracts with customers run only to the spring of 1939, Fournier said, "because we couldn't tell what might happen in the industry any longer than that."

Fournier also testified that major company employes had taken licenses of trucks coming to his stations, and later solicited their owners, trying to get their business away from him.

Many retailers in his part of the state, he told the commission, are posting prices three cents lower than his, with the result that all their customers get the three-cent discount which only his contract customers obtain, he said.

Testimony by a commercial consumer that "we never know when we're getting a 'right' price, because after we've signed a contract with one company at what seems a good price, another one comes along and offers us even a better one" was offered at the hearing in connection with discounts by supplying companies.

William J. Clifton, Philadelphia auctioneer, a commercial buyer, said he was purchasing 8000 to 9000 gallons a month now from American Oil Co. at 4.5 cents off retail, but added he had been solicited "at least 20 times by all the majors," and declared he believed he could get seven cents off if he tried to drive a sharp bargain.

Association Activity Costly

His activity in the Retail Gasoline Dealers Assn. of Washington County, particularly in lobbying for passage of the price-posting law, was blamed by George R. Conger of Washington, Pa., service station operator, for the "lack of co-operation" now existing between him and his supplying company—Pennzoil.

Before he became active, Conger said he got deliveries "pronto," and that all his calls on his supplier were met in a spirit of co-operation. After he became known for the association activity, however, he said, he would sometimes wait all day for deliveries, getting the excuse that "all the trucks were busy."

He testified that Pennzoil's manager in that district had called him during his most active period with the association and told him that he (the manager) would have to stop "co-operating" unless Conger ceased his lobbying and other organizational work. Conger leases his station from Pennzoil.

Contracts of numerous large buyers of petroleum products—the city of Philadelphia, the Philadelphia Rapid Transit, Yellow Cab Co. of Philadelphia, the Great Atlantic and Pacific Tea Co., American Stores, and others—were subpoenaed by the commission and will be made a part of the record.

Some purchasers said they had only verbal agreements, based on published prices in Platts Oilgram and other trade publications. One witness, Robert H. Crawford, purchasing agent for American Stores, was asked if he'd ever tried to get a definite, set, price per gallon over any period of time with his supplier (Atlantic Refining Co.), but answered "they wouldn't acquiesce to it." He said that he believed market fluctuations would prevent such an agreement.

Most of the commercial consumers testified they bought at tank car price or less, although deliveries are made in tank wagons in some cases.

Chairman Smith sought to learn what accounted for the different costs to dealers in western, central, and eastern Pennsylvania, in his questioning of J. P. Mitchell, Pennsylvania manager for Pure Oil Co., and others. Mitchell said the cost was higher in the western part of the state because of transportation costs from the seaboard.

Mitchell said the market today is "pretty much as established under NRA" and, like all other major company witnesses examined in the opening day's session, said that the price is a competitive one.

"Follow Anybody"

"We follow anybody; and glad to get it," he said, referring to his following the latest price rise posted by Standard Oil of Pennsylvania two weeks ago. But Mitchell said it was also a sad fact that, when they go down, "we have to follow then, too."

Senator E. J. Thompson, Phillipsburg, a member of the commission, then asked if it wasn't true that "in this game of follow the leader," the leaders generally were Atlantic Refining Co. or Standard of Pennsylvania.

"I guess so," said the witness, although it was testified by other witnesses that the recent attempt by Standard (which raise has now been hacked away again) was the only time that company has tried to be a market leader in this state.

P. H. Curry, president of South Penn Oil Co., was questioned, as a producer of Pennsylvania crude, as to "who sets the price" for this crude, and Judge Smith reminded him that, at a hearing of the commission at Oil City last month, it was testified that South Penn fixed the price to producer.

Curry, however, maintained that "supply and demand" are the factors in fixing the price, and produced a chart showing how increasing demand at the present time had recently caused a price rise. He said his company was drilling now, trying to get new production to meet this demand.

"My personal sympathy," Curry remarked, "is with the producer. Any maladjustment always goes back to the poor little producer—and I'm one of 'em."

Here Smith asked about the capitalization of South Penn, and was told it was $25,000,000, which caused the chairman to remark, "one thing about association with these oil men, it makes you rearrange your ideas of size."

Shock Advocates "Divorce"

Clarence Shock of Mount Joy, Pa., president of the Independent Jobbers Assn. of Pennsylvania, maintained the major companies should be divorced from marketing, stating that they lose money on their marketing operations but are able to cover up this loss by large profits in other branches of the industry; whereas a jobber, dependent only on marketing, is at their mercy.

It was the same argument used by Shock in his appearance before Congressional committees holding hearings this spring on the Connally law. He asserted that the major oil companies get more actual return from selling their gasoline, unbranded, at the eastern seaboard, than they do when they take it inland themselves (into Pennsylvania in this case) and sell it under their own brand and through their own marketing set-up.

"I presume it's the same gasoline, too," Shock said.

Shock's argument went beyond the realm of the Pennsylvania investigation, into a discussion of the Connally law, proration in the western producing areas, and "protection of private capital with state or federal laws."

He attacked the conservation argument advanced by pro-ration proponents, and said the chief effect of such laws was to give companies "operating under their protection" an unfair advantage. He introduced as evidence his testimony at the Connally hearings in Washington.

At the opening of the Philadelphia hearings Judge Smith announced that the commission has appointed Dr. Samuel Bryson Ross, head of the department of economics at Carnegie Institute of Technology, as its secretary. He will act also as an economic adviser, Judge Smith said.

Approximately 75 witnesses—ranging from major company

presidents to filling station attendants—have been subpoenaed for the four-day hearings, which will run into night sessions in order to hear all testimony.

Recapitulating previous hearings, Judge Smith said that, at a preliminary meeting with major company heads, they all said the industry was in good shape, well regulated within itself, giving petroleum products to the consumer at a lower price than ever before, and that it would go on like this unless interfered with by "too much government." Subsequent hearings, Judge Smith said, proved that "nobody" agreed with this—especially retailers and producers who have testified.

There will be no further hearings, after the present session closes July 29 until after Labor Day, Judge Smith added.

The chairman reiterated that "we are trying to get at the truth of this situation in Pennsylvania, so that we can piece together a story." The commission is directed to make the investigation into the industry to see if it should be regulated by law.

Minnesota Chain Tax Bill Defeated

MINNEAPOLIS, July 26.—The chain store tax bill was defeated last week at the current special session of the Minnesota legislature.

The bill, as introduced, would have included gasoline service stations and petroleum bulk plants, as well as all other lines of business.

The measure would have imposed a tax on the basis of the number of units operated by a chain company whether located in Minnesota or in other states.

Who Pays Auto Tax?

LOS ANGELES, July 26. — Who pays the automotive tax burden?

F. E. Foster, manager of the Pacific Coast Petroleum Industries Committee said the fact that only 17.6 per cent of the families in California file federal income tax returns, while there are 1.15 passenger cars per family, is proof that the automotive tax burden is borne largely by families with low incomes.

Data compiles from official records indicated that 46.5 per cent of the income tax returns filed in this state cover family incomes of less than $2000 a year—a further indication of limited financial ability to pay taxes, Foster said.

Court Asked to Ban Drilling For Oil on R. R. Right of Way

N. P. N. News Bureau

WASHINGTON, July 26. — The U. S. Supreme Court has been asked to outlaw the drilling of oil and gas wells on railroad rights of way.

In a case brought by the Oakwood Realty Co., Jefferson County, Texas, against the Gulf Production Co., and others, the realty company claims that a question of "vital importance to the public interest" is involved. The question is summarized in their petition as follows:

"Can land dedicated to an exclusive public use be validly exploited for private profit when such exploitation interferes with and constitutes an undue burden on interstate transportation of freight and passengers?"

Oakwood granted the Texas & New Orleans (now part of Southern Pacific lines) railway an easement for right-of-way across a plot of ground containing 77/100 of an acre. Later, the railroad company leased this, along with other right-of-way land, to the Rio Bravo Oil Co., its subsidiary.

Meanwhile, Oakwood had leased to Gulf Production Co. other land, adjoining the right-way at the point where the 77/100 of an acre in question was located.

Sues In Texas Courts

Oakwood brought suit in Texas courts to recover from Rio Bravo for oil taken from its land on the right of way, contending that the easement to the railway was for railway purposes only, and that Oakwood still owned the minerals. Rio Bravo took out almost $4,000,000 worth of oil, it was contended.

In the course of the court proceedings, Gulf Production Co's. lease was held "as a matter of local law to include by presumption the railroad right of way adjacent to it," and instead of the almost $4,000,000 being turned over to Oakwood, it was turned over to the Gulf company, according to the petition.

The court held that Gulf's lease extended to the center of the right of way, instead of to the edge of it.

Even if the lease was interpreted as including the right-of-way, Oakwood now contends, it was not valid insofar as it included the right-of-way, since it contemplated the drilling of wells on the right-of-way of a common carrier.

Use is Limited

Oakwood's petition for a writ of certiorari to the Texas Court of Civil Appeals at Beaumont declares, "It is the view of your petitioner that a railroad right-of-way is permitted by law to be condemned for public purposes only; that every foot of that right-of-way must be used by the railroad company for the sole purpose of promoting the business for which it was chartered, that is, the transportation of freight and passengers for the general public."

The petition says that wells are being drilled on rights-of-way over the entire country, and the practice "may be expected to increase unless the court declares it illegal."

The court, continues Oakwood, "judicially knows that at any moment such a well may blow in, become out of control, on fire, and destroy the lives of numerous passengers or valuable properties of shippers."

Further, when a well is "gassing" on the right-of-way, traffic must be delayed, as "it would be exceedingly dangerous and hazardous for any trains to pass such a well," it is contended.

The court will not rule on the petition until it opens its next term in October.

Dealers Organize To Enforce Law

(*Continued from page* 9)

over to county chairmen for investigation, with the name of the informant being kept secret.

"If the investigation proves chiseling, the association will try to straighten out the affair itself. If unsuccessful, the facts will be turned over to legal authorities."

Peck said he can make contact with the 2864 stations in the Detroit area in two hours. He has divided the city into 41 sections, each section having one director who heads up seven districts in his section. Each division under the director has a captain, who in turn is in charge of all the stations in his district.

When immediate action is desired, Peck calls each of the 41 directors. These directors then call their respective captains, who in turn make contact with the dealers in their districts.

Brought Adulteration

Commenting further, Peck said, "This new law will permit the honest gasoline distributor to remain in business and the entire industry to pay better wages and give better service. It was inevitable that the discount practice sooner or later would have led to the adulteration of the product. The dealer must make up that discount in some manner, and adulteration is the easiest way."

Peck said that he anticipated no increase in the retail price of gasoline. He added that the price is controlled by the major distributors, and not by the retailers.

Mexican Regulations Aid Tourist Travel

N. P. N. News Bureau

WASHINGTON, July 26. — Tourist travel is to be "regulated" in Mexico—but the new regulations, as reported to the Department of Commerce here from the American Consulate at Mexico City, are aimed at the satisfaction of the tourist rather than at the restriction of his movements.

The country is to be divided into 15 tourist zones, and all foreign tourist agencies conducting tours must maintain a representative in Mexico City to take care of the necessary legal formalities incidental to tourist travel.

A bond must be furnished the government by tourist agencies and organizers of Mexican excursions, guaranteeing satisfaction in performance, regardless of whether the excursions are arranged locally or originate outside the country. Only native Mexicans are eligible to be licensed as guides, and parties of tourists with any one guide must be limited to 12 persons.

"Gouging" of tourists merely because they are tourists is to be prevented by a regulation which requires that no hotel keeper, tourist agency, guide or any person connected with the tourist "industry," may make any change in a government-established schedule of tariffs, hotel rates and other charges, without governmental sanction.

Third Michigan Oil Expo

MT. PLEASANT, July 26. — Housing facilities for the third annual Michigan Oil & Gas Exposition are well under way in the recreation park in downtown Mt. Pleasant. The Oil & Gas Ass'n. of Michigan and the Mt. Pleasant Chamber of Commerce are sponsoring the show, to be held Aug. 10 to 15.

The main exhibit building is 200 by 30 feet. This will house the exhibits of oil and gas companies and equipment and allied industries.

Fuel System Road Tests Launched

Directed By Two Oil Associations

N. P. N. News Bureau

TULSA, July 26.—Road tests to secure new data on vapor locking and vapor loss tendencies at carburetor bowls of various makes of automobiles has been started by the Natural Gasoline Assn. of America and the Western Petroleum Refiners Assn.

The problems of vapor lock are caused by formation of vapor in fuel systems which stops fuel flow to the engine, starving it and preventing operation. Study of fuels and systems during the late twenties and early thirties brought about changes in design which include vents in carburetors which waste into the air some of the lightest portions of the fuel. Rhea Couch of Bartlesville is director in charge of the road tests, supervising a crew of five members, four of which are college undergraduates. The first of the tests is being run on a 30-mile course on U. S. Highway No. 60, west of Pawhuska, Okla. Other sections of the same highway between Bartlesville and Nowata, Okla., and possibly some highways in Texas, also will be used before the tests are completed.

Finished After Aug. 15

The steering committee had hoped that most of the road work could be completed by Aug. 15, but cool weather has caused delay.

The program calls for testing of the various automobiles under the American Petroleum Institute's tentative 1937 road test procedure, with results to be sent to the Central Correlation Committee. These tests are similar to those being conducted by various companies throughout the United States, but in this instance the two associations' members decided to conduct co-operative tests.

In addition to the A. P. I.'s tentative test procedure, the program calls for specific tests to determine duplicability, a study of correction factors, and eventually tests to determine as closely as possible the magnitude of vapor losses at the carburetor bowl.

"It should be kept definitely in mind," a recent progress report of the steering committee stated, "that the object is not to test fuels but to test fuel systems. In the opinion of your planning committee this is an important point since many of the shortcomings of past road test work are undoubtedly traceable to the fact that the testers were more interested in whether a fuel would or would not give trouble free operation in a car. No consideration was given to vastly different characteristics provided the systems would handle a fuel of the same vapor pressure. One of such fuel systems might owe its standing to the fact that the temperatures throughout the system were low, while another would owe its standing to an unusually high vapor-wasting-capacity . . . . In the opinion of your committee a simple yardstick to measure the relative standings of fuel systems from model to model and from year to year would be of enormous value to fuel system designers . . . "

Question List

The committee also has reported that it plans to concentrate on several points in addition to following the tentative standard tests. "In effect," the report stated, "these points will be clarified if we can secure sufficient information to answer all of the following questions:

"1. Employing the present test method, how closely can an individual tester check himself and how closely can others check him as to the permissible vapor pressure fuels that any one car can handle?

"2. Should fuel systems be rated solely on the basis of permissible vapor pressures or should the test method be such as to differentiate between cars of different vapor wasting capacities?

"3. What is the magnitude of the losses incurred through the venting of vapors at the carburetor bowl in the various cars?

"4. The present vapor lock road test procedure uses a correction factor to convert permissible vapor pressures at the test temperature to terms of permissible vapor pressure at a standard temperature of 100 degrees F. How valid is this correction factor?

"5. How long does it take to run a reliable vapor pressure requirement on a car using the present tentative test method? Is it possible to modify the test so that more reliable information could be gained in less time without the need for specially trained observers? Is it possible to modify the test so that results constitute a truer test of cars? Do standard reference fuels of different characteristics than those employed at present have any promise of simplifying the procedure and improving the results?"

Equipment

In seeking the answers to the questions the committee has developed some special equipment. Multipoint potentiometers for determining fuel system temperatures were located on all the cars to be tested. Some laboratory equipment was installed at the cabins which are being used as headquarters.

The project is under the direction of a steering committee representing the N. G. A. A., composed of T. W. Legatski, Phillips Petroleum Co., Bartlesville, Okla., chairman; E. C. LeFevre, Empire Oil & Refining Co., Bartlesville; C. R. Williams, Continental Oil Co., Ponca City, and a similar committee of W. P. R. A. members composed of J. D. Brazier, Barnsdall Refining Co., Barnsdall, Okla.; W. W. Scheumann, Empire Oil & Refining Co., Tulsa, and F. A. Deering, Kanotex Refining Co., Arkansas City, Kan.

Atlantic Fuel Tests Go On Road

PHILADELPHIA, July 26.—Atlantic Refining Co. will resume on the road a research program, principally on anti-knock quality of fuels, which has been under way for some months in the laboratories. Following the laboratory testing the fuels will be road-tested in a group of ten cars, under conditions varying from mild to the most severe city and country driving, the company announcement said.

The test cars will operate over a section of highway near Lewistown, Pa. A driver and trained observer will operate each car, testing a series of fuels in comparison with standard test fuels, resulting in road ratings in terms of octane numbers.

These road tests in the hottest months of the summer will be repeated to obtain the corresponding data and values under cold weather conditions. Data will be used in improving the anti-knock quality of fuels.

Steel Shortage Slows Plant Construction

LOS ANGELES, July 24.—Difficulty in obtaining materials, steel and machinery is delaying construction of Tide Water Associated Oil Co.'s new cracking and polymerization plants at the Avon refinery, on San Francisco Bay.

Although original plans called for the completion of these units in August, it is now indicated that operations may not start until September or October. Much of the delay is due to the steel strike of some weeks ago.

Tide Water's Associated Division is building a 14,500-barrel cracking unit and a 5,000,000-cubic foot capacity polymerization plant. This latter refining addition will yield about 213,000 barrels of polymerized gasoline per year. The engineering firm is Alco Products, Inc.

The company is spending approximately $2,000,000 in refinery expansion at the Avon plant.

Texas Sues National On Behimer Patents

FT. SCOTT, Kans., July 23.—Suit charging infringement of two Behimer "clean circulation" cracking patents was filed here July 20 by The Texas Co. against National Refining Co. of Cleveland. The patents are Nos. 1,840,012 and 1,883,850, issued to Behimer Jan. 5, 1932, and Oct. 18, 1932, respectively, assigned to The Texas Co. Suit was filed in U. S. District Court for the Third District of Kansas.

National Refining Co. operates refineries at Coffeyville, Kans., and at Marietta and Findlay, Ohio. This company recently settled, by agreement out of court, a suit filed against it by Universal Oil Products Co., which charged infringement of the Dubbs "clean circulation" patent, and effected a license agreement with Universal.

New "Poly" Unit

BATON ROUGE, La., July 26.—Standard Oil Co. of Louisiana has closed a contract for the construction of a non-selective gas polymerization unit, to be built at the refinery here. The unit is under Universal Oil Products license and will be built by Arthur G. McKee Co., of Cleveland.

The cost of the unit is estimated at approximately $500,000. It will probably be ready for operation the latter part of 1937, according to announcement.

Louis Blaustein Dies At Resort

By Telegraph

ATLANTIC CITY, July 27.—Death here today closed the career of Louis Blaustein, Baltimore, one of the pioneer oil men on the East Coast and founder of the American Oil Co., at the age of 68. He died from a cerebral hemorrhage, after an illness of less than a week.

Funeral services will be held July 29 in Baltimore. Survivors include his widow, Mrs. Henrietta G. Blaustein, his son Jacob, who was associated with him in the oil business, and two daughters, Mrs. Alvin Thalheimer and Mrs. Henry A. Rosenberg, all of Baltimore.

Born Jan. 20, 1869, in Prussia, Blaustein came to the U. S. in 1884. He started in the oil business as a salesman for Nicholi, "coal oil" jobber in Baltimore. Later he worked for other independent oil companies and then for the Standard Oil Co.

In 1910, borrowing money to buy a horse and wagon, Blaustein started the American Oil Co., building it up to become one of the leading marketing companies on the East Coast, operating "from Maine to Florida."

He is credited with developing a premium motor fuel, and pioneering in the use of a tank wagon for delivery of kerosine and of visible gasoline pumps.

Figured in Merger

Half of the American Oil Co. stock was sold to Pan-American Petroleum & Transport Co. in 1923, in a deal to supply the Blaustein company with its gasoline requirements for ten years. Nine years later Standard of Indiana acquired control of Pan-American. In 1933 American Oil was merged with Pan-American, with the Blausteins taking a 27 per cent interest in Pan-American and the Indiana Standard 70 per cent.

Louis Blaustein became chairman of the board for American Oil and president of Pan-American. Jacob Blaustein became president of American Oil and a vice-president of Pan-American.

Under the Blaustein management, the "world's largest gasoline refinery" was built by Pan-American at Texas City and the first of the company's fleet of tankers were launched.

In March of this year, the Blausteins filed suit in New York against the Standard Oil companies of Indiana and New Jersey, and a number of officers of both companies, charging violation of agreements and "wasting" of Pan-American's assets. The suit is still pending.

About the same time, the Blausteins resigned as officers of the American Oil and Pan-American companies, although retaining their stock and positions as directors.

Funeral Services Held For 'Ike' Monroe

BELLAIRE, O., July 23.—Funeral services were held here today for Isaac G. Monroe, 57, for nine years field and legislative repesentative of the Ohio Petroleum Marketers Assn., Inc. He died of a brain hemmorhage July 20 at Huron Road Hospital, Cleveland.

Mr. Monroe had been confined at the hospital since May 30.

Well known in the Ohio industry, Mr. Monroe was a 32d degree Mason and Knight Templar and a member of the Junior Order United American Mechanics. He is survived by his brother and sister, E. S. Monroe of Parkersburg, W. Va., and Mrs. A. P. Deafenbaugh, of Bellaire.

U. S. Tourist Trade Boosted Canada 'Gas' Demand to New High in 1936

TORONTO, July 26. — The maximum volume of the Canadian oil industry was reached in 1936. In that year the imports of crude petroleum attained a new high, totalling 1,244,663,000 gallons, against 1,156,788,000 in 1935, the preceding high point.

The larger requirements of the country were accounted for principally by increased industrial activity and by a larger tourist trade. Sales of gasoline totalled 617,842,000 imperial gallons in 1936, a gain of 7.7 per cent over the preceding year. The increase reflected greater demand from June to August and so, to a considerable degree, was the result of improved conditions in the U. S., which produced an increased flow of summer tourists. After showing a declining trend from 1929 to last year, a rebound has been shown in 1937 to date in the official index of the price of gasoline, based on Toronto quotations.

During 1935, the last year for which complete statistics are available, 45 refineries operated in Canada, with a combined capacity of 160,350 barrels of crude oil per 24-hour day. The increase in the number of operating refineries has been an outstanding feature of the industry in recent years, many small units having been constructed, particularly in the Western provinces.

The refineries used 1,196,000,000 gallons of crude oil in 1935, of which nearly 72 per cent was imported from the U. S., about 25 per cent from South America and Trinidad, and 3.4 per cent was from Canadian wells.

The volume of gasoline made in 1935, amounting to 514,000,000 gallons, was the highest on record up to that time, being 11 per cent greater than the output in 1934 and double the quantity in 1927. Capital employed in Canadian refineries amounts to $64,000,000.

Gain of 15-20 Per Cent in Visitors To Parks Forecasts Heavy Travel

N. P. N. News Bureau

WASHINGTON, July 26. — Gains averaging from 15 to 20 per cent in attendance at the nation's natural parks in May over May, 1936, reported by the National Park Service, forecast a bumper tourist crop for the 1937 season.

Last year National Park Service estimated that one-fourteenth of the nation's population saw "America first." A. E. Demaray, acting director of the park service, said that this year good weather and early vacations had combined to increase travel to mountain parks and southwestern recreation spots to a considerable degree.

For example, in the east, Virginia's Shenandoah National Park recorded 130,938 visitors during May, nearly 60,000 more than May a year ago. Colonial National Historical Park in Virginia scored the highest travel figures on record in the area: 45,166 visitors, an increase of 21 per cent over May, 1936.

Conservative estimates set the amount spent by each person visiting one of these areas at $5 a day—which moves into communities adjoining the parks and monuments, a large part of it going for automobile fuel, accessories and supplies.

Ideal camping conditions in Yosemite Valley and at Wawona brought record-breaking numbers; automobile travel was exceptionally heavy, and total travel increase in this area in May, compared with last May, was 15.6 per cent.

The big trees at Sequoia National Park to the South of Yosemite attracted 19,683 visitors during May, 1234 more than were registered a year ago.

New Bridge Factor

Muir Woods National Monument, in California, also reached new highs in attendance over the holiday week-end of May 30. Construction of the Golden Gate bridge across San Francisco Bay has reduced the travel time to this stately grove of red-woods.

Thirty-three per cent more visitors saw Wind Cave National Park's (South Dakota) famous bison herd in May this year than last, according to the Park Service; Hot Springs National Park, Ark., checked off 23 per cent more, and figures on visitors to Platt National Park, Oklahoma, showed a 17 per cent increase.

Several national parks which do not normally attract their greatest numbers of visitors until summer were surprisingly popular in May. Gains over the 1936 records for that month were noted at Crater Lake, Ore.; Yellowstone and Grand Teton, Wyo.; Mount Rainier, Wash., and Rocky Mountain, Colo.

ICC Tells Railroads To Pay Reparations

By Teletype
N. P. N. News Bureau

WASHINGTON, July 26. — A half-dozen railroads in California, Nevada and other states, have been ordered by the Interstate Commerce Commission to pay reparations amounting to almost $25,000 to three major oil companies on account of "unreasonable" rates charged for carrying refined petroleum products in carloads from California points to destinations in other states.

Standard Oil Co. of California will get $9,224.20 from the rails under the orders; Shell Oil Co., $8,336.77, and The Texas Co., $5,786.51.

In another reparation order, the ICC awarded the Southern Natural Gas Corp., $6,992.30 to be repaid by 12 railroads on account of "unreasonable" rates charged on numerous carloads of wrought iron pipe from McKeesport, Pa., and Gary, Ind., to points in Alabama and Mississippi.

Moves Offices

CHICAGO, July 26. — The Yankee Petroleum Corp. has moved its general office from 95th St. and South Chicago Avenue to its bulk plant at 6602 South Park Avenue, Chicago.

WASHINGTON

By A. M. PETTY
N. P. N. Washington News Bureau

From the Crown Block . . .

Something Fishy About The Story Of Anti-Trust Probe Of Jobbers

WASHINGTON, July 26.

If there ever was a news item fulfilling the man-bites-a-dog definition, it was the Associated Press dispatch sent out from here a few days ago which read:

"WASHINGTON, July 22. (AP)—The Justice Department today sought to learn if wholesale oil jobbers in eastern states are pegging the price of gasoline in violation of federal anti-trust laws."

That's all there was to the story. But it was NEWS, in capital letters.

Here were the oil jobbers being investigated on charges of fixing prices—the same charges the jobbers made against major oil companies which culminated in the indictments returned at Madison, Wis.

The Justice Department's official press spokesman, when asked about the AP story, denied that he had given it out but promised to check up on it with lawyers in the anti-trust division.

Later, he called back to remark cryptically, "the department is investigating price-fixing in one form or another by the oil industry in many sections of the country."

This comment was not worth much as a denial; it was worth even less as a confirmation. By his manner, the press spokesman indicated that he had talked with higher-ups in the department and suspected them of giving out the story—but he was not going to deny it categorically.

This view is confirmed by internal evidence in the AP story itself.

The story makes a flat statement, without hanging it on anybody, that eastern oil jobbers are being investigated on charges of pegging gasoline prices. There is no qualifying phrase added, such as "it was learned authoritatively" or the like.

Now, the Associated Press is jealous of its reputation for accuracy and would insist that its reporters hang such statements as these on some official source, in the absence of an official announcement. The few exceptions to this rule are usually in cases where the reporter can assure his office that the story comes from an authentic source and he has every reason to believe that it will not be repudiated.

This particular AP story therefore points to a source high in the Justice Department—indeed, a most-high official.

If the truth bears out these earmarks, then what was the purpose of this "high official" in planting such a news story?

It is unfathomable—unless someone wants to throw the scare of an anti-trust investigation into some group, without actually launching a detailed investigation.

The AP story about an anti-trust investigation of *jobbers* was greeted with shocked surprise in some corners of the Justice Department. And well it might, in the face of persistent reports that the department is on the verge of another investigation of the major oil companies on complaint of Independent oil jobbers, similar to the probe at Madison but this time on the East Coast.

* * *

Oil Speeches Flood Nation

Congressman Fred M. Biermann, Iowa, has exercised his privilege of "extending his remarks" in the CONGRESSIONAL RECORD to insert a lengthy statement on his bill to divorce oil marketing from the production, refining and pipeline branches.

This is just another way of saying that Biermann has taken the first step toward flooding the country with copies of his remarks on this bill—to be mailed postage-free.

Anything that has been printed in the "Record" is entitled to be mailed under the congressional frank without payment of postage.

It is an easy, and nearly cost-free, method of circularizing the views of a member of Congress on some particular subject. The only expense is for re-printing a facsimile from the "Record" and addressing the envelopes. Free of charge, the congressional folding room folds and inserts the printed matter in envelopes bearing the member's frank. Emblazoned on the outside of the envelope is an attention-catching summary of its contents.

Frequently, some interested parties are willing to pay for the printing and addressing, supplying the mailing list in the bargain.

Congressman Biermann shouldn't be singled out for this—it is a time-honored custom indulged in by all, or nearly all, members of Congress.

Some weeks ago Congressman John M. Coffee, Washington, made a radio speech in support of his bill to nationalize the oil industry. This speech was also "extended" in the "Congressional Record."

Beginning with the old Standard Oil Trust of a generation ago, Coffee comes down to date, reciting all of the sins and ills of the oil industry—including too-low prices in government bids—as evidence of the "need" for his nationalization bill.

More recently, Coffee has inserted in the "Record" a statement commenting on the so-called oil conspiracy case at Madison, Wis., and quoting an abbreviated text of the gasoline pool indictment.

Coffee's statements have flooded the mails by the tens of thousands. Before long their total "circulation" may exceed 100,000 copies.

Meeting Date Changed

CLEVELAND, O., July 23.—Dates of the fall conference and golf tournament of the Ohio Petroleum Marketers Assn. in Cleveland have been changed from Sept. 29 and 30, to Oct. 6 and 7, according to the "Ohio Petroleum Marketer," official bulletin of the association.

The change was deemed advisable due to a large convention booked for Cleveland on the September dates. The Marketers will meet at Hotel Carter, Cleveland, as previously planned, for business sessions the first day, and at the Westwood Country Club for golf the second day.

Fined In Violation Of Safety Rules

DETROIT, July 24.—Cities Service Oil Co. plead nolle contendere this week in Federal District Court for Eastern Michigan and was fined $250 on each of eight counts charging the company with violation of Interstate Commerce Commission regulations governing loading inflammable liquids into tank cars.

The first count of the indictment, holding the company responsible for the death of two men in an explosion last September, was held not valid by the court. The court followed recommendations of Assistant U. S. District Attorney Peter P. Gilbert and the Interstate Commerce Commisssion.

The company was found guilty of violation of Paragraph 218, Section C of the explosives act which reads: "Tank cars must be loaded with outlet valve caps off." This usually enables prior detection of faulty unloading valves.

The indictment covered an incident at the water terminal of Cities Service last September. At that time, Gilbert said, 3500 gallons of gasoline flooded the concrete driveways during unloading of tank cars, and fumes seeped into an elevator shaft of a nearby building. Two men were killed in an explosion that followed.

Kentucky Oil Jobbers Will Golf Sept. 8

LOUISVILLE, July 24.—The seventh annual golf tournament of the Kentucky Petroleum Marketers Assn. has been set for Sept. 8, the place to be announced later. Last year 47 players participated and it is expected there will be from 60 to 70 this year, according to The Kentucky Petroleum Marketer, official bulletin of the association. Prizes for the tournament are donated by oil and equipment companies.

First Aid Contest

SHREVEPORT, July 23.—The 11th annual first aid contest sponsored by the American Legion will be held here Nov. 11. Teams from five states already have registered.

The contest will be conducted according to the rules of the U. S. Bureau of Mines. Trophies will be awarded the winning teams in the various classes. Those wishing to compete should communicate with the American Legion, P. O. Box 334, Shreveport, according to Louis Lyons, Arkansas Fuel Oil Co.

"Why I Like To Work For My Company"

This essay, written by Walter J. Held, of the sales development department of the Standard Oil Co. of California, was a prize winner in a nation-wide contest conducted by Forbes Magazine. It presents a straight-forward, concise summary of his appreciation of his employer's efforts in furthering sound employe relations, and of their deep understanding of the workers' problems—Editor.

By WALTER J. HELD

My employer has never caused me to regret the time I obtained my first job here twenty-four years ago. True, I can't point to reaching any great height in an executive capacity but I can at least now in retrospect see that the reason has not been the fault of my company. A man's own limitations, combined with circumstances or happenstances, are tremendous governing factors.

There are two outstanding reasons for my profound appreciation and admiration for this company. These are stability of employment and unlimited possibilities for advancement for everyone.

During the past six years when my friends and neighbors suffered from adversity, with jobs swept away over night, with employers closing down or effecting drastic and frantic curtailment, I have never once had the fear of my own employer failing me.

True, this company was seriously affected by the same economic circumstances as any other industrial enterprise, and, too, there have been periods of feast and famine within our industry, when the source of raw material — crude petroleum — dwindled, and smaller minded persons became panic stricken, and there have been times of disturbing over-production.

There have been long months of chaotic price conditions, of dishonest competition by bootlegging and tax evasion of unscrupulous operators. There have been times of upsetting legislative action, carrying threats of governmental competition, and there has been a steadily increasing burden of taxation.

True Humanitarians

But through it all my employer has quietly, soundly, and most intelligently continued to conduct its affairs, to lead our industry in putting and in keeping its house in order, and to demonstrate at all times its good citizenship and its civic consciousness. This wise administration for decades has served us exceedingly well. In these recent sober days our officials have proved not only able industrialists but true humanitarians, as I will illustrate to you.

Back in 1931 much of our construction work had been completed, which set free a considerable number of men. Oil field operations had been curtailed, and the general slump in business added to the difficulties of the situation. But instead of lay-offs, this company appointed a committee to devise a plan which would make it possible to employ its full force of men throughout this time when work was so difficult to obtain.

A plan was developed whereby a certain number of employes, — starting with men of short service, would be placed on part-time. Some 250 men in the oil field and manufacturing departments were placed on a reduced working month. This period was necessarily adjusted in accordance with the particular requirements of each department, some men working half-time and others two-thirds time. As certain construction jobs were completed and work became scarce, the number of men on part time was increased. Eventually other departments adopted the same program.

As the months went by and labor conditions within the organization became even more acute, it was decided to build a pipeline in addition to the one it already had from the San Joaquin Valley oil fields to the Coast, at a cost of approximately a half million dollars. In order to avoid the necessity of throwing several hundred men out of employment, this work was undertaken a year and a half earlier than it otherwise would have been.

Between 300 and 500 employes were provided with work through the winter months. They operated on a four-day-week basis, thus spreading the labor among the greatest possible number of men.

Altogether this share-the-work plan saved the jobs of 3000 workers who otherwise would have been released. So successful was its operation that the president of our company was called to head a coast-wide movement of the same nature, which ultimately spread throughout the nation, as you know.

For many years it has been obvious to everyone that the company made every effort possible to assist its workers. It was the first company in the United States to establish the eight-hour-day when workers in the oil fields, pipe line pumping stations, and refineries, had been on a twelve-hour day basis, with no decrease in pay.

Also it was first to adopt the six-day week for drilling crews, who formerly remained constantly on the job until it was completed. It had placed its employes on a monthly payroll after one had completed a year of continuous service, regardless of the nature of his work. This status made everyone eligible for the same privileges and conditions of work. There is the annual vacation of two weeks with full pay. Compensation is made during sickness and recovery from accident, depending upon length of service and regardless of whether or not the result of performance of duty. For many years there was a pension plan which has since been changed to an even more attractive arrangement on an annuity basis.

Came from the Ranks

Undoubtedly the greatest incentive to all employes here in this company are the really inspiring careers of the several hundred executives selected for management positions, including members of our board of directors.

There are ten officers comprising this administrative body. Our president, recently completing thirty-nine years of continuous service, began as a fireman in a pipe-line pumping station. Four vice presidents' careers can be traced to respective entries into the company as stenographer, salesman, chain man on an engineering gang, and office clerk. Other members of the board started in the capacities of geologist, clerk, office boy, and civil engineer.

Of the 283 managerial positions existing in this organization we find only 24, less than 10 per cent of these men began in an executive or supervisory capacity.

We know there is a very personal and sympathetic understanding of the problems confronting the workers. It explains why so many wise measures, practices, and benefits have been made to enhance the employment of those working for this company. It explains why industrial relations between the employes and the company have always been so highly satisfactory.

It explains why an exceedingly low labor turn-over dating many years back is characteristic of this organization. Of the 12,423 (not including 5175 employes of subsidiaries) employes on our payrolls at the end of 1936, 64 per cent, or 7946 persons, had ten years or more of continuous service. Of this number 7 had been with the company 40 years, 22 thirty-five years, 148 thirty years, 422 twenty-five years, 1298 twenty years, 2840 fifteen years and 3189 ten years.

A matter most pertinent to every employe of course is that of wages, and it is recognized by the workers, I am sure, that this company has always been particularly fair in matters of compensation. An example of this policy is illustrated by an announcement made in December, 1936, of equalizing wages and advancing remuneration for like classes of work in all departments.

A year ago announcement was made that warmed the cockles of the older employes' hearts — hereafter upon reaching 25 years of continuous service, instead of the regular two-weeks' vacation, this quarter century anniversary would be celebrated by a five-weeks' vacation with pay. And upon the completion of every five years after that a six-weeks' vacation with full compensation would be awarded these veterans — with everyone participating.

Some months ago the company encouraged employes forming credit unions, whereby the investment funds of those employes inclined could be utilized as loans to other less fortunate workers; permitting a fair investment on one hand and reasonable credit facilities on the other.

There are employe associations for social and industrial welfare purposes, facilitating among other things collective bargaining of problems arising within the ranks. There are personnel representatives for all branches of the organization readily available for conferring with employes on matters of individual personal portent; the managers and superintendents of field operations and plants are likewise easily reached by the individual workers whenever the latter is prompted to discuss his problems with his management.

Answering the Forbes Magazine query, "Why I Like to Work for My Company," could any more convincing reasons be enumerated than these? Surely the Standard Oil Company of California fits the measurements of a conscientiously fair and reliable employer."

Mid-Continent Skyline

By LAWRENCE E. SMITH, N. P. N. Tulsa News Bureau

TULSA, July 24

Anyone who has been in Texas in the past two months has come upon a strange tale of political potentialities. According to rumor the cards have been shuffled and dealt and all the deuces and one-eyed jacks are wild.

Gov. James V. Allred, the story goes, is to be appointed judge in the newly created federal district of southern Texas; the lieutenant governor will succeed Allred as governor and will immediately appoint Elliott Roosevelt to the Railroad Commission of Texas, to succeed Col. Ernest O. Thompson, who will have been appointed to the Federal Communications Commission by Elliott's papa.

By 1938, so the rumor goes, Elliott will have become well enough known to the electorate to run for governor of Texas and be elected and that will take him up to 1940, when the voters will enthusiastically send him to the U. S. Senate and throw Senator Tom Connally into the ash can.

The crystal ball of the soothsayers clouds up at this point and we do not learn how soon Elliott is to become President.

Elliott passed through Tulsa this week and was interviewed by local men of the press. He denied knowing anything about the arrangements and said he doubted that Col. Thompson was to take a federal position as he understood the colonel was "out for the governorship" and wouldn't want to leave Texas.

Young Mr. Roosevelt lives in Fort Worth and works for Mr. Hearst in the latter's radio station business. He also dabbles a bit in oil.

How this melange was ever stirred together we do not profess to know. We do remember that one time, at a holiday celebration, an oil producer grew expansive in his thoughts and announced that he was going to raise the price of oil two-bits. The fact that he was not a purchaser did not keep the story from getting into the newspapers and there was quite a little excitement for two or three days.

* * *

Random hot weather thought: Why did Prof. Pickard go to all that trouble about his balloon ascension in Minnesota when he could have gotten more altitude in his car in Colorado?

* * *

Capt. Stanley Leaves Railroad Commission

It seems that Capt. E. N. Stanley really is leaving the Railroad Commission of Texas. We printed an item some time ago setting July 1 as the date of retirement of this man, who has been head of the commission's forces in East Texas for about four years. Somehow the commission talked him out of it and he didn't leave; but last week he put a note on the bulletin board at the commission offices in Kilgore in which he thanked all the commission employes there for their cooperation. The commission said it hadn't accepted his resignation but he is going anyway. He will engage in private engineering practice.

Following that statement by the commission, another was issued saying that W. J. Christian had been named as Stanley's successor. Mr. Christian has been an assistant to the captain for the past three years, part of the time in the Corpus Christi office.

* * *

Marginal Allowables Govern Proration

It is not wholly market demand that governs the proration in Texas nor is it physical waste. More and more, the state Railroad Commission is bumping into the marginal well law. That law prohibits proration of a well below a set amount, depending on the depth of the well. East Texas wells, for example, cannot be prorated below 20 barrels. It is now nearly impossible to reduce the allowable in East Texas. The more wells drilled in a pool the more the approach to the guaranteed minimum. In any field in the state that marginal allowable constitutes a base line. When that base line is hit the total allowable will rise if drilling continues.

Some figures worked up by Railroad Commission engineers reveal that, on June 1, the total allowable of the state was 1,394,470 barrels. Of this 122,637 barrels were assigned to wells that were marginal in the true sense of not being able to make more than the statutory minimum. There were 30,357 such wells. Then, of the 41,793 proratable wells, the minimum guaranteed to them represented 846,310 barrels. That left, of the total allowable, only 425,523 barrels that could be prorated.

Roughly one third of the state's allowable production June 1 was truly prorated oil. That ratio continues to fall because of the new wells that come in. The Railroad Commission could not legally reduce the state's allowable to less than something over one million barrels daily.

Some contend that the legislature did not mean to set a minimum for wells of high potential production but was legislating to protect pumping wells. The Railroad Commission, however, has construed the law to apply to all wells.

* * *

Oklahoma's production continues to slip, as revealed by the June figures of the Oklahoma Corporation Commission. The state as a whole lacked 6783 barrels of making its daily allowable of 625,300 barrels. Oklahoma City, with total allowable of 128,000 barrels daily, fell down to the extent of 7618 barrels daily. No pool in the state today is coming along to halt the decline.

Depletion Allowance Saves Oil In Marginal Well, Agency Says

N. P. N. News Bureau

LOS ANGELES, July 26. — While elimination of the depletion allowance, as proposed by Presidenet Roosevelt, appears improbable at the present session of Congress, the Oil Producers Agency of California is continuing to furnish its members with arguments against such action.

Elimination of the depletion allowance would deter explorations and the exploitation of marginal wells, the agency asserted in Part 3 of its report to members.

The report also stated that any higher revenues to the government resulting from elimination of the depletion allowance would be offset by diminished taxes from petroleum consumers, higher cost to the government for the petroleum products it buys, and decreased income taxes from the oil industry itself, which would be weakened by elimination of the allowance.

"Recision of percentage depletion will deter explorations and diminish the number of discoveries of oil and gas wells", the report said. "The loss of one important discovery may result in a greater loss to the United States than the amount of additional revenue that may be gathered from recision of percentage depletion.

"The practice in the United States of investigating the relevant tax factors before launching any new business enterprise is common, if not universal. In any investigation of the expediency of any exploratory program, the average prudent prospector will estimate the net yield or reward to accrue from success. In determining the net yield from success, percentage depletion is a factor, and thus percentage depletion affects the odds involved in the exploration gamble. If these odds are reduced by recision of percentage depletion, many exploration programs will not be launched which otherwise would be undertaken."

Taxes a Part of Cost

Whether or not the oil in the earth will be produced or wasted depends upon the cost of exploiting it, the report continued, and the cost of exploiting it depends upon the taxes that form a component part of these costs. If an increase in taxes increases costs above the recoverable value in the marginal oil deposit, then the oil is wasted.

"Any additional revenue which might be derived from the revocation of rights to percentage depletion would be set off by incidental loss of revenue," according to the report. First, the United States would bear a portion of the additional tax burden as an important consumer of petroleum products. Second, to the extent that any additional tax imposed upon the industry might be shifted to consumers in the price of products, the United States as a whole would contribute. Income taxes, for example, on manufacturers of petroleum products would be curtailed to the extent that the tax is shifted to them and absorbed by them.

1937 Consumption Of 'Gas' Will Reach Peak In August

N. P. N. News Bureau

WASHINGTON, July 26. — The month of August will mark the peak of gasoline consumption this year, topping even the record-shattering demand of July, according to the Bureau of Mines.

Last year, July was the peak month; in 1935 it was August, and also in 1934. So August is returning to its former place as the banner month of gasoline demand.

The bureau predicts that domestic demand in August will reach a total of 52,600,000 barrels, or 14 per cent higher than actual demand figures for August last year. However, the bureau points out that August demand last year was "abnormally low."

Besides this, gasoline exports will amount to 2,900,000 barrels in August.

Required production of crude will average 3,462,900 barrels daily during August, according to the bureau's calculations. But the action of the Texas Railroad Commission, in setting the allowable production for that state at 1,495,491 barrels, or more than 100,000 barrels above the bureau's figures, indicates that its estimates are somewhat conservative.

Will Reduce Stocks

A reduction of 5,000,000 barrels in gasoline stocks is anticipated by the bureau during August. Taking this into account, and adjusting for benzol and natural gasoline, it is estimated that gasoline production for the entire country will be 49,400,000 barrels, or 1,594,000 barrels daily, during the coming month. This is distributed among the refining districts, as follows:

District	Barrels
East Coast	6,960,000
Appalachian	1,820,000
Ind.-Ill.	8,520,000
Oklahoma	3,260,000
Kans.-Mo.	3,010,000
Inland Texas	3,930,000
Gulf Texas	11,590,000
Gulf La.	1,560,000
No. La.-Ark.	930,000
Rocky Mts.	1,210,000
California	6,610,000
Total U. S.	49,400,000

Refinery Runs At Capacity

To meet the unprecedented demand in August, it will be necessary to run a daily average of 3,295,000 barrels to stills, the bureau estimates. A few months ago, the bureau pointed out that 3,300,000 barrels was regarded as the total effective refining capacity, without disturbing what balance now exists between the different refining districts.

The natural gasoline percentage for August is figured at 6.4, while the gasoline yield is estimated at 45.267 per cent.

The bureau estimates runs of foreign crude for August will be 2,900,000 barrels; exports of crude, 5,200,000 barrels; and crude burned as fuel and losses, 2,900,000 barrels.

Following is the bureau's estimates of daily crude production by states required to meet demand during August, with comparative estimates for July and actual production figures for May:

State	Forecast August	Forecast July	Actual Prod. May
Texas	1,395,200	1,375,100	1,431,200
Oklahoma	633,400	629,700	655,100
California	612,800	605,500	657,000
Louisiana	253,900	253,000	246,100
Kansas	200,500	195,600	206,100
New Mexico	100,800	100,800	111,700
Pennsylvania	53,600	53,700	51,000
Wyoming	52,800	52,900	51,700
Michigan	39,900	39,800	42,500
Arkansas	29,100	28,400	27,000
Montana	17,700	16,200	17,900
Kentucky	16,800	16,100	15,800
New York	15,200	15,600	14,900
Illinois	13,000	13,000	13,400
West Virginia	10,700	10,700	10,500
Ohio	10,300	10,700	9,900
Colorado	4,900	4,700	3,700
Indiana	2,300	2,300	2,300
	3,462,900	3,423,800	3,577,800

New Producer Indicates 2d Kettleman Sand

N. P. N. News Bureau

LOS ANGELES, July 24.—Oil men were forced to reshape their estimates of the Kettleman Hills area the past week with development by the Kettleman North Dome Assn. of a 1200-barrel, light gravity oil producer from a depth of 10,753 feet.

At latest reports the well was yielding 46 gravity oil to the tune of about 1200 barrels a day, together with nearly 20,000,000 cubic feet of gas. It represents the first production in the Avenal sand and, as an outpost, has extended the proven limits of the field more than half a mile to the northwest. Located on the northwest flank of the North Dome structure, this well is some distance north and east of the Lillis & Welch No. 1, which established a record for depth in the field but failed as a commercial producer.

Field scouts say this new producer, which is No. 4-18-J of Co. of California. He later became associated with Little & Bell, Ltd., California drilling contractors now known as Bell-Loffland, Inc. He recently became manager of the Middle Dome Corp., a unit development organization operating in the middle dome of the Kettleman Hills.

Associated with the new division as consulting geologist will be A. G. Melville who for the past seven years has been chief geologist of the Chanslor-Canfield Midway Oil Co., oil producing division of the Santa Fe Railway.

His preliminary estimates indicate nearly a third of a million acres of California Land's holdings are situated in possible oil or gas areas, while more than 35,000 acres of this total are considered to be potential producing territory. Geological and geophysical exploration will be started to add to this indicated potential.

The company plans immediate development of its holdings in the Santa Maria field and will start additional development work as rapidly as conditions will permit, Woodruff said.

KENDA's projects, is acting in much the same manner as Milham Exploration Co.'s Elliott No. 1, which discovered the Kettleman field nearly 10 years ago and indicates a substantial new reserve may underlie the present producing sands. Production in the new well is reported coming from about 40 feet of sand.

California Lands, Inc. To Open Acreage

N. P. N. News Bureau

LOS ANGELES, July 24.—Development of oil and gas lands on more than 325,000 acres held by California Lands, Inc., subsidiary of Transamerica Corp., has been announced by E. D. Woodruff, president.

The development will be conducted by an oil and gas division headed by Frank Jones, who first entered the oil business in 1919 with Standard Oil

Farish Warns Of Rate Of Stock Increase

NEW YORK, July 26.—Consumption of oil products in foreign countries this year has shown about the same rate of increase as in the U. S. and the petroleum industry's outlook is the brightest it has been for a decade, W. S. Farish, president of the Standard Oil Co. (N. J.) stated on shipboard today, before sailing for a two-months tour of European Standard Oil subsidiaries.

World-wide consumption in the first five months of 1937 gained about 10 per cent over 1936, according to all indications, while American exports for this period have run about 25 per cent ahead of the corresponding period in 1936.

Mr. Farish warned the industry against a "general tendency to disregard the recommendations of the U. S. Bureau of Mines as to crude production" and stated that the country could stand a reasonable increase in stocks, but that, at the present rate of accumulation, "the industry is patently inviting trouble."

Michigan Producing Wells Gain 9%

MT. PLEASANT, Mich., July 26.—Producing wells in Michigan were nine per cent higher in number in June than April, with practically no change in daily field runs, as reported by the Oil and Gas Assn. of Michigan. The summary by fields, given below, shows 42,342 barrels daily average runs for June. Total number of wells jumped from 1425 in April to 1551 in June.

Pool	Wells	Runs Bbls.
Porter-Yost	430	11,843
Greendale-Chippewa	281	2,483
Geneva-Midland	5	33
Vernon-Leaton - Denver	101	2,274
Sherman-Isabella	24	4,263
Crystal-Montcalm	111	1,474
Home-Edmore	8	138
Winfield-Montcalm	1	6
Beaverton	24	398
Buckeye-Wicklund-Oard	149	12,794
Ogemaw	198	2,338
Clayton-Arenac	21	3,103
Saginaw	59	38
Birch Run	26	101
Dundee-Monroe	2	26
Allegan County	12	762
Muskegon	99	268
Michigan Total	1,551	42,342

Expo Opens Office

TULSA, July 26.—International Petroleum Exposition has reopened its downtown Tulsa offices in preparation for the 1938 exposition which will be held May 14-21. E. Merl Clark, recently appointed assistant general manager by William B. Way, the general manager, is in charge of the offices.

Record Allowable Set For August By Texas Agency

TULSA, July 24

So carried away with enthusiasm over present and potential demand for Texas crude oil did the Texas Railroad Commission become this week, that it set an allowable for August exceeding anything to date.

The U. S. Bureau of Mines forecast of demand placed the Texas daily average at 1,395,200 barrels; but the commission, which has rarely agreed with the Bureau estimate, went more than 100,000 barrels above the federal agency's forecast. The allowable for Aug. 1 will be 1,495,491 barrels. The next day it will be higher, for the Texas allowable normally increases during the month as oil wells are completed.

The gain in allowables that results from completion of new wells is illustrated by the July performance. The basic allowable on July 1 was 1,385,476 barrels and, on July 17, it was 1,423,273 barrels, an increase of 37,797 barrels because 619 oil wells were completed in the 16 days. Assuming that the increase for the last 15 days of July will prove to be the same as that for the first 16 days, the actual jump in production on Aug. 1, compared to July 31 will be only 36,700 barrels.

It seems that the recent Bureau of Mines survey of crude oil in storage was an inspiration to the Texas commission to boost allowables. Chairman C. V. Terrell made this statement in announcing the new proration order:

Quoted Report

"The report of the survey of oil in storage shows there is in storage, as of May 31, 1937, 308,000,000 barrels of oil. Of this amount it takes about 100,000,000 barrels to fill pipelines, gathering systems, tankers en route, and working stocks at refineries, actually leaving only about 200,000,000 barrels of crude for our needs for refining purposes, or just a little over 60 days supply.

"Then, further, it should be considered that the bulk of these 200,000,000 barrels is in the hands of a few strong companies. It is not the policy of the law or of the Railroad Commission to make oil scarce in order to make it high. The law specifically charges us with protecting the consumer of gasoline.

"We feel that a critical point has been reached in storage of Texas oil. For example, the Bureau of Mines report shows that Oklahoma has oil of its origin stored of sufficient amount to meet 133 days of their demand, whereas Texas has only 93 days' supply in storage to meet the demand for Texas oil. It was felt that Texas should be more nearly in line with Oklahoma with regard to days' supply.

"Consumption has been increasing by leaps and bounds. It will take 90,000,000 barrels of burner distillates to furnish fuel for the 1,500,000 heating installations. More are going in all the time. We feel that the time to give our producers of oil an increase is that season.

"Therefore, we have stepped up our production slightly for the purpose of protecting the consumer and to replenish our depleted stocks."

In this spirit of benevolence toward producer and consumer, the commission granted increases all along the line. It must be said that the testimony taken at the hearing on July 19 amply supported the increases, for producers from nearly all parts of the state asked that allowables be upped and the nominations by purchasers, as usual, ran away above the increases granted. On the basis of figures submitted by purchasers, the allowable should exceed 1,600,000 barrels daily, but there is quite a little padding in these figures and some duplication, hence nominations in Texas are not reliable guides to demand, as

DAILY AVERAGE PRODUCTION IMPORTANT DISTRICTS
American Petroleum Inst. Figures

	Week Ended Barrels July 24	Barrels July 17
Oklahoma City	151,700	144,750
Total Okla. ..	637,250	630,900
East Texas ..	469,800	468,700
Total Texas..	1,419,400	1,417,350
Rodessa	49,500	48,250
Total La.	259,100	259,350
California ...	671,000	667,100
E. of Rockies.	2,905,400	2,890,850
Total U. S....	3,576,400	3,557,950
Crude Imports	92,280	84,000
Tot. new sup'ly	3,668,680	3,641,950

Motor Fuel Stocks Cut 500,000 Bbls.
Crude Runs Are Reduced

N. P. N. News Bureau

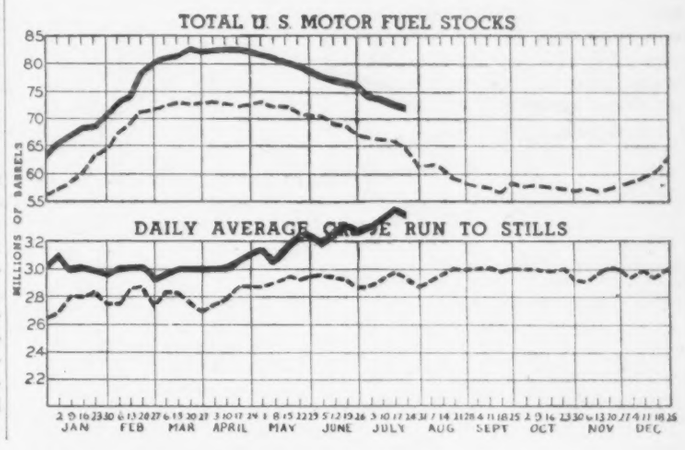
NEW YORK, July 27.—Decreases of nearly 500,000 barrels in stocks of motor fuels and 36,000 barrels in daily average crude runs to refinery stills, marked the high spots of refinery operations the week ended July 24, according to the American Petroleum Institute.

Total motor fuel stocks, which had declined 1,350,000 barrels the week ended July 17, declined 496,000 barrels the past week, to 68,130,000 barrels. A year ago motor fuel stocks totaled 60,360,000 barrels.

Stocks at refineries declined 564,000 barrels, to 38,243,000 barrels on July 24. In-transit and terminal stocks gained 77,000 barrels, to 22,643,000 barrels, and stocks of unfinished gasoline also rose 11,000 barrel, to 7,244,000 barrels.

The largest decline in motor fuel stocks was in the Indiana-Illinois-Kentucky district, where they were lowered 353,000 barrels. California stocks were down 98,000 barrels, Rocky Mountain 76,000 barrels and Texas Gulf, North Louisiana-Arkansas and East Coast each down around 30,000 barrels. The largest increase of the week was 127,000 barrels in Inland Texas.

Crude runs to refinery in East Coast plants were reduced 30,000 barrels, accompanied by a decrease of 4.5 per cent in refinery operations. Indiana-Illinois-Kentucky lowered runs 24,000 barrels, while plants in Oklahoma-Kansas-Missouri increased them 20,000 barrels.



CURRENT REFINERY OPERATIONS

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks Thousands of Barrels: Total Finished and Unfinished Motor Fuel*		Stocks Thousands of Barrels: Total Finished Gas & Fuel Oil	Stocks Thousands of Barrels: Gas & Fuel Oil	% Total Capacity Reporting	'Cracked Gasoline Production Daily Av. Production (Barrels) Week Ended	
		July 24	July 17	July 24	July 17	July 24	July 17	July 24	July 17		July 24	July 17
East Coast	100.0	564,000	594,000	84.3	88.8	18,201	18,231	10,807	10,261	100.0	126,000	103,000
Appalachian	88.4	111,000	109,000	86.0	84.5	2,871	2,893	857	828	94.6	25,000	24,000
Ind., Ill., Ky.	92.4	449,000	473,000	92.6	97.5	12,223	12,576	6,489	6,208	98.5	125,000	134,000
Okla., Kans., Mo.	84.6	334,000	314,000	87.9	82.6	7,298	7,282	3,292	3,295	90.3	79,000	76,000
Inland Texas	56.6	145,000	151,000	72.1	75.1	1,979	1,852	1,679	1,708	71.7	42,000	37,000
Texas Gulf	95.5	725,000	720,000	95.8	95.1	8,755	8,788	8,606	8,339	98.0	163,000	159,000
La. Gulf	96.3	140,000	135,000	88.6	85.4	1,788	1,784	2,600	2,459	100.0	24,000	30,000
No. La., Ark.	63.7	45,000	45,000	77.6	77.6	434	465	400	409	77.5	8,000	7,000
Rocky Mt.	69.7	58,000	52,000	93.5	83.9	1,588	1,664	798	779	85.4	11,000	14,000
California	90.9	518,000	532,000	69.4	71.3	12,993	13,091	68,062	68,159	98.0	68,000	53,000
Total Reporting	88.9	3,089,000	3,125,000	84.7	85.7	68,130	68,626	103,590	102,445	94.8	671,000	637,000
Estimated U. S. Total (Bur. of Mines Basis)		3,380,000	3,415,000			72,020	72,546	106,260	105,085		710,000	705,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.

was long ago demonstrated in Oklahoma.

By major districts in Texas the starting figure for August, with allowables on June 1 and July 1, are as follows, figures being in barrels daily:

District	June 1	July 1	August 1
E. Texas	462,000	466,000	470,734
Panhandle	76,048	77,017	79,215
Moore county	1,348	1,348	1,555
Osborne area	635	635	635
N. Texas	60,450	61,000	63,735
Foard county	550	675	675
West Central	65,460	67,848	71,302
W. Texas	172,492	177,040	213,498
East Central	76,269	82,601	87,124
Rodessa	35,068	36,048	37,718
Southwest Texas	213,667	221,973	246,826
Gulf Coast	186,275	193,291	222,449
Total	1,350,262	1,385,476	1,495,491

The East Texas factor of proration, 2.32 per cent of the rated hourly potential of the wells, was left unchanged. The figure given above for Aug. 1 is the amount which is estimated in advance as the total allowable on that date.

Many Given Increases

Several fields were granted liberal increases. South Ward, in West Texas, was boosted 8714 barrels over the July 1 allowable. Yates, which was repeatedly whittled at and kept below what most of the operators there thought was an efficient rate of production, was increased 9964 barrels to total of 35,239. Conroe, a Gulf Coastal field, was increased 9975 barrels. Hastings, another Coastal pool and the pride and joy of the Stanolind Oil & Gas Co., was upped 6377 barrels. Goldsmith, in West Texas, gained 5033 barrels. Flour Bluff, in Southwest Texas, was increased 1780 barrels and gets a new total of 6100 barrels and the Tomoconnor field, also in Southwest Texas, was given the biggest helping of any of the many fields in that division, 4140 barrels, to new high of 15,940 barrels.

Within a few days the conservation bodies of Oklahoma, Kansas, New Mexico and Louisiana will prescribe the production rate for August. The Bureau of Mines has already forecast increases in demand for them and it remains to be seen whether they will adhere to the federal agency recommendations. Oklahoma and Kansas have been pretty consistent in basing their allowables on the bureau's figures; Louisiana generally goes her own way and New Mexico in recent months has been slightly above the Bureau forecast. Oklahoma and Kansas, however, grumble audibly when Texas cuts loose with a big increase, as that state has a habit of doing, and those two states have in past times kicked over the traces.

Some purchasers view the Texas action with a little alarm. Despite the words of Chairman Terrell and Commissioner Ernest O. Thompson—the latter is fond of saying that it is hard to keep up with this "wonderful Democratic prosperity"—these buyers say things are getting a trifle soft around the edges. Foreign buyers have developed a tendency, they say, to lay off the market. Some, it is said, demand that gathering and loading charges on crude be absorbed in part by the seller.

The competition for new connections, quite pronounced early in the year, has abated and most purchasers seem to be well fixed for supply, say men who keep in close touch with this phase of the industry.

P. C. Jarvis Dies

TULSA, July 24.—P. C. Jarvis, 63, vice-president of the Jarvis & Holm Oil Co., died at his Tulsa home yesterday. His company is a substantial producer in several fields of the Mid-Continent.

Crude Stocks Decrease 116,000 Bbls.

N. P. N. News Bureau

WASHINGTON, July 27. — Bureau of Mines reported today that crude stocks totaled 307,139,000 barrels on July 17, representing a drop of 116,000 barrels from July 10.

Stocks, by grades of crude, for July 10 and 17, follow:

Grade of crude oil	July 10	July 17	Change from July 10
Penna. Grade	3,912	3,942	+ 30
Other Appal.	885	868	− 17
Lima-N. E. Ind.-Mich.	1,517	1,521	+ 4
Ill.-S. W. Ind.	9,722	9,789	+ 67
N. La. and Ark.	9,802	9,656	−146
W. Tex. and S. E. N. M.	30,837	30,676	−161
East Texas	24,299	24,594	+295
Other Mid-Cont.	126,977	127,072	+ 95
Gulf Coast	25,543	25,495	− 48
Rocky Mts.	24,974	24,773	−201
California	28,174	28,088	− 86
Foreign	2,313	2,315	+ 2
Total reported	288,955	288,789	−166
Est. of unreported	18,300	18,350	+ 50
Total stocks	307,255	307,139	−116

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THE METALLURGIST CONTRIBUTES

By ARCH L. FOSTER, Technical Editor

To no branch of engineering or science does the petroleum industry owe more than to the metallurgist. We borrowed distillation practices from the alcohol and the coal tar industries. One of the first if not the very first bubble towers used in fractionation of petroleum products was purchased, apparently in used condition, from a benzol rectification plant and installed in a Mid-Continent refinery two decades or more ago.

Yet it may be said that the metallurgists' work has made modern refining possible. He is not singly and entirely responsible; the present level of refining technology could not have been reached without the chemist, the designing engineer, the instrument maker and many others. Without the highly developed science of alloys, however, the efforts of all these would have fallen painfully short of the needs of the industry.

One of the gravest features of early cracking methods was the imminent danger of disastrous and deadly explosions due in most cases to burned and weakened metals in the crude cracking stills in use in the late teens and early twenties. Then carbon steels were used exclusively for all equipment; none other was considered practicable, either economically or technically.

Then small amounts of alloying metals, 2% to 3% of nickel, of chromium, and later of both came to be used, as sheet and tube failures increased and operators clamored for steels to withstand higher temperatures and heavier pressures, to increase gasoline yields and raise quality. The tube still speedily replaced the shell or shell and tube stills, and with the reduction in diameter of the heated container pressures rose rapidly. The metallurgist was busy, producing alloys and trying them out in service. Expensive failures occurred, but out of the ruck came the popular so-called 4-6 chrome steels, later to be fortified by the addition of small amounts of molybdenum, tungsten, titanium to raise fatigue resistance, resistance to oxidation, and corrosion.

As operating conditions became more severe, stainless steels and then the 18-8 nickel-chromium varieties came into use. The latter showed extreme oxidation and corrosion resistance, but showed also the unhealthy habit of "letting go" and blowing out, when its limits had been reached, without the warning of the preliminary swelling so familiar with less highly alloyed types. They were also very expensive, so that variations of lower alloys have been developed to handle severe service demands.

More recently, to combat corrosion, erosion, oxidation and other troubles more effectively, silicon and other additions have been perfected, heat treatments have been devised and a tremendous mass of operating data has been collected to show the results obtained from these numerous alloys under innumerable variations in plant conditions.

Aluminum was first used for special purposes in the familiar calorized tubes several years ago, and showed interesting results in different services. In most of these developments, no one organization made the important advances. The list of contributing metallurgical experts is a long one.

In this second issue of REFINING TECHNOLOGY is the first published announcement of a new steel alloy, involving aluminum and other metals in a somewhat new arrangement. It has been shown by test service in plant operations to possess some interesting properties which will be a valuable addition to the refiner's metal list if present indications are correctly indicative of its properties. The new alloy has been tested in severe operating conditions, and the first results are shown here for the information of users of these materials. These data, presented in rather concentrated form, should prove of major interest to the petroleum refiner. Further investigation of the alloy will be a valuable study, to determine the part which this material will play in the growing list of alloys which the refiner can use.

Refining Technology

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This new 5 per cent chromium-molybdenum-silicon-aluminum alloy steel may be considered a substitute for certain high alloy stainless steels and is intended for severe service as an economical choice where corrosion at elevated temperatures is a problem.

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THERMAL

Natural gases and refinery gases now being produced in the United States contain potential production of additional high antiknock motor fuel estimated conservatively at over 100,000,000 bbls. a year.

This tremendous source of additional motor fuel can be tapped by the use of the Thermal Polymerization Process which is applicable to saturated as well as unsaturated hydrocarbons.

Plants whose sources of charging stocks include refinery by-product gases, natural gases, or both, should investigate the advantages of Thermal Polymerization Units through this organization or its agent, The M. W. Kellogg Company.

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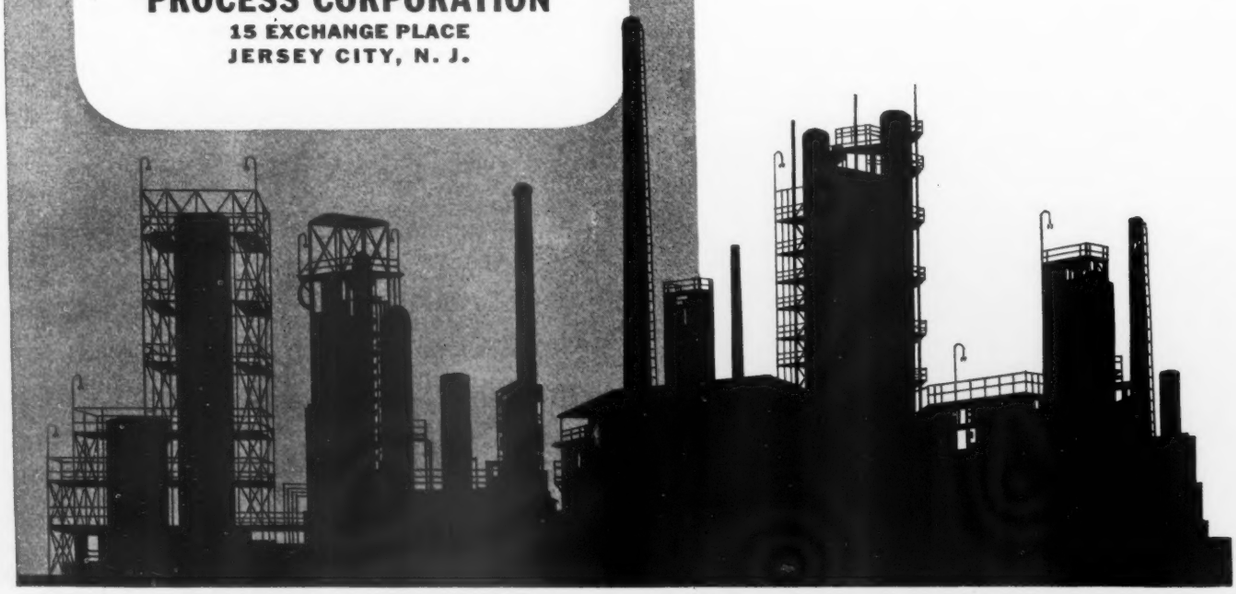


POLYMERIZATION

Aluminum Alloy Steels For Sour Crude Refining

By MARTIN FLEISCHMANN* and S. D. WILLIAMS**

● A new chromium-molybdenum-silicon-aluminum alloy is announced for use in refining highly corrosive sour crudes. Five years ago the first tubes were placed in test service in heat exchangers; these tubes are still in excellent condition, these authors state. Two years ago cracking still tubes were placed in service, cracking very sour crude at 425 lbs.—925°F.

Aluminum addition reduces air-hardening of the alloy; similar reduction of work-hardening due to the rolling-in operation is expected.

MORE THAN TWICE THE CORROSION RESISTANCE is shown by this new alloy in tubes, as compared to 4-6% chrome-moly tubes in the same still, during 10,000 hours.

Corrosion was mild throughout the tubes, no preferential corrosion being found in different parts of tube. No grain growth shown at 1340°F. average temperature for 1842 hours; considerable grain growth at 1490°F. average for same period. Aluminum has effect of titanium in stabilizing steel structure.

THERE is a steadily increasing demand in the oil industry for more economical materials of high strength and good scale and corrosion resistance at elevated temperatures. The refining of sour crude oils especially is dependent upon economical materials of increased corrosion resistance. While a number of stainless steels offer a solution of the tube corrosion problem caused by the use of high sulfur crudes, frequently many of their outstanding properties can not be fully utilized in a given installation. The use of these high alloy steels therefore may prove uneconomical.

Assisted by the Department of Engineering Research at the University of Michigan, Timken laboratories have worked for a decade in the development of intermediate alloy steels to meet the definite demands of the oil industry. Two new series of steels have now been built up from the proven chromium-molybdenum steels by the additions of silicon and aluminum, two elements which markedly increase the scale and corrosion resistance of ferrous alloys.

Silicon was the first of the two elements employed in a series of intermediate alloy steels. Under the name of "Sicromo" steels, these materials have been in use in a number of installations and have proven their value by their increased corrosion resistance and their excellent scale resistant qualities.

*Metallurgical Engineer, Steel & Tube Division, The Timken Roller Bearing Co.
**Director of Sales, Steel & Tube Division, The Timken Roller Bearing Co.

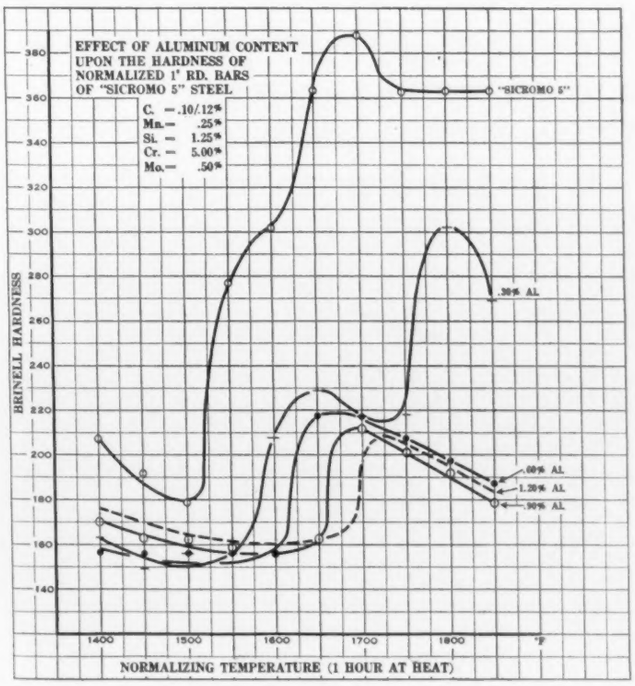


Figure 1

The highly corrosive crude oils found in certain oil fields, however, demand still higher corrosion resistance than can be obtained from the Sicromo steels. Aluminum, therefore, was added as the additional element to combat the attack of the high sulfur crudes. Numerous manufacturing problems had to be solved before this aluminum bearing steel could be processed into seamless tubes.

These difficulties were overcome, however, and about five years ago an installation of aluminum-bearing tubes was made in a heat exchanger against high sulfur crude oil and vapor. These tubes are still in excellent condition.

Over two years ago a number of 5% chromium-molybdenum-silicon-aluminum steel tubes, 5¼" O.D. x ¾" wall, were installed in a cracking still operating with very sour crude under a maximum pressure of 425 lbs. and a maximum oil temperature of 925° F. This installation has been under continuous observation, the following data indicating the character of results which may be expected from 5% chromium-molybdenum-silicon-aluminum steel in oil refinery service.

A recent inspection reveals that the cracking still tubes show more than twice the corrosion resistance of the regular 4-6% chromium-molybdenum steel tubes in the same still. The ends of the 4-6% chromium-molybdenum tubes, which had been work-hardened by the rolling-in process, showed considerably more evidence of corrosion than did other portions of those tubes. However, no preferential corrosion was evident in the case of the silicon-aluminum bearing tubes, such corrosion as existed

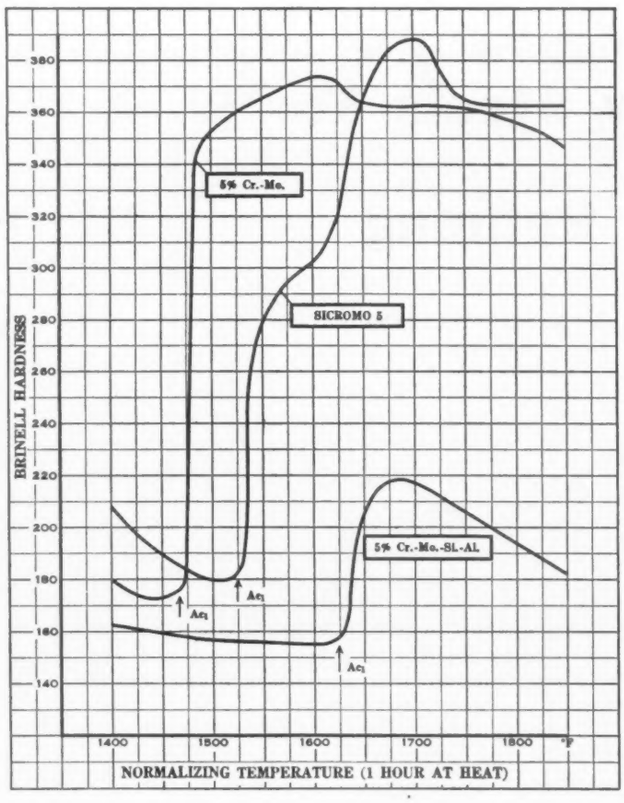


Fig. 2. Comparison between 5% Cr-Mo, Sicromo 5, and 5% Cr-Mo-Si-Al steels, showing their airhardening characteristics

being uniformly mild throughout the length of the tubes. The reason for this difference in attack cannot as yet be definitely stated. We do know that the addition of aluminum reduces the air-hardening of the steel in which it is used. A similar effect upon the work-hardening due to the rolling-in operation may be expected.

Fig. 1 illustrates the effect of adding varying amounts of aluminum to Sicromo 5 steel. Increasing the aluminum content greatly reduces the effect of air hardening and at the same time raises the transformation range. Fig. 2 clearly shows the difference in carbon change-point between the standard 4-6% chromium-molybdenum steel, the same steel with 1.00-2.00% silicon (Sicromo 5), and the silicon-bearing steel with .60-.80% aluminum added. This difference provides an additional safety factor in furnace operation, for the new type steel may be heated 150° F. hotter than the 4-6% chromium-molybdenum steel before the phase change occurs. Even severe over-heating does not destroy the ductility of steel containing both silicon and aluminum, and unless over-heating has been prolonged to such an extent as to cause excessive grain growth, no difficulty would be anticipated.

A series of investigations was made on the 5% chromium-molybdenum-silicon-aluminum steel used in the cracking still previously mentioned, tests being made before the tubes were shipped and on samples taken from a tube removed after approximately 10,000 hours of service. As shipped, this steel showed the following physical properties, based on tests made on longitudinal strips cut from the tubing, the gauge sectional area being 1" x wall thickness (¾") and the gauge length being 2". Average results are given in Table I.

TABLE I

Original Physical Properties of 5% Cr-Mo-Si-Al Steels

Yield Point Lbs./sq. in.	Ultimate Strength Lbs./sq. in.	Per Cent Elongation	Per Cent Reduction of Area	Brinell
44,500	72,100	45.0	69.0	143-146

Two similar strip tensile test specimens as well as two standard 0.505" tensile bars were machined from the end as well as the middle of the tube which had been in service. The physical properties obtained are given in Tables II, III and IV, the yield point being determined by using dividers on the strip specimens and noting the beam drop in the case of the standard 0.505" tensile bars. The tensile properties of the tube after approximately 10,000 hours of service appear at least equal to the original values determined.

TABLE II

Physical Properties of 5% chromium-molybdenum-silicon-aluminum Steel After Approximately 10,000 Hours Service

Sample Number	Yield Point Lbs./sq. in.	Ultimate Strength Lbs./sq. in.	Per Cent Elongation	Per Cent Reduction	Brinell
1 (strip)	47,400	72,100	49.0	68.7	146
1 (strip)	45,300	73,000	50.0	68.0	143
Average	46,350	72,550	49.5	68.3	143-146
2 (strip)	48,600	72,000	49.0	69.2	146
2 (strip)	47,600	72,000	49.0	67.7	146
Average	48,100	72,000	49.0	68.4	146
1 (.505")	40,500	72,000	37.5	73.9	146
1 (.505")	40,200	72,000	38.0	73.0	143
2 (.505")	40,500	72,000	38.5	71.6	146
2 (.505")	40,000	72,000	38.0	73.0	146
Average	40,300	72,000	38.0	73.0	143-146

Impact values determined from Izod as well as Charpy specimens cut from the tube after service reveal the values shown in Table III.

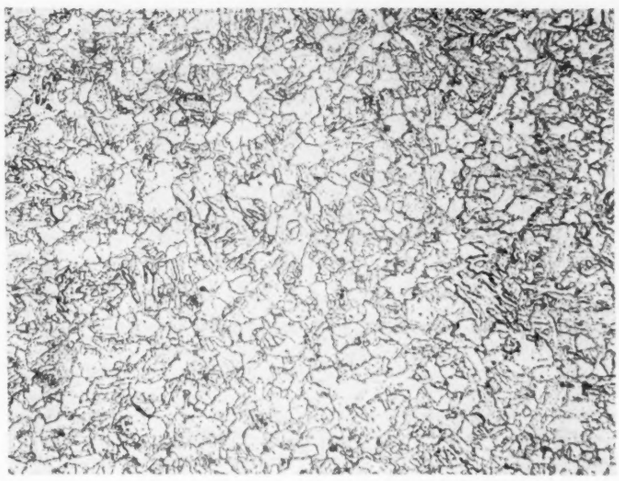


Fig. 3. Structure of annealed 5% Cr-Mo-Si-Al tubing, X100, before installation. This structure is characterized by small ferrite grains with interspersed carbides

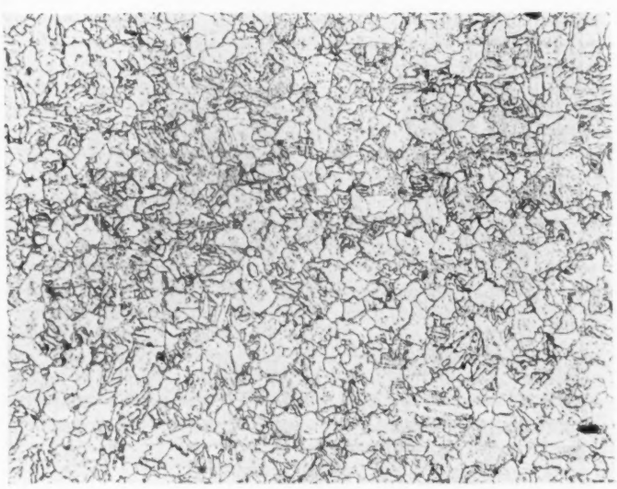
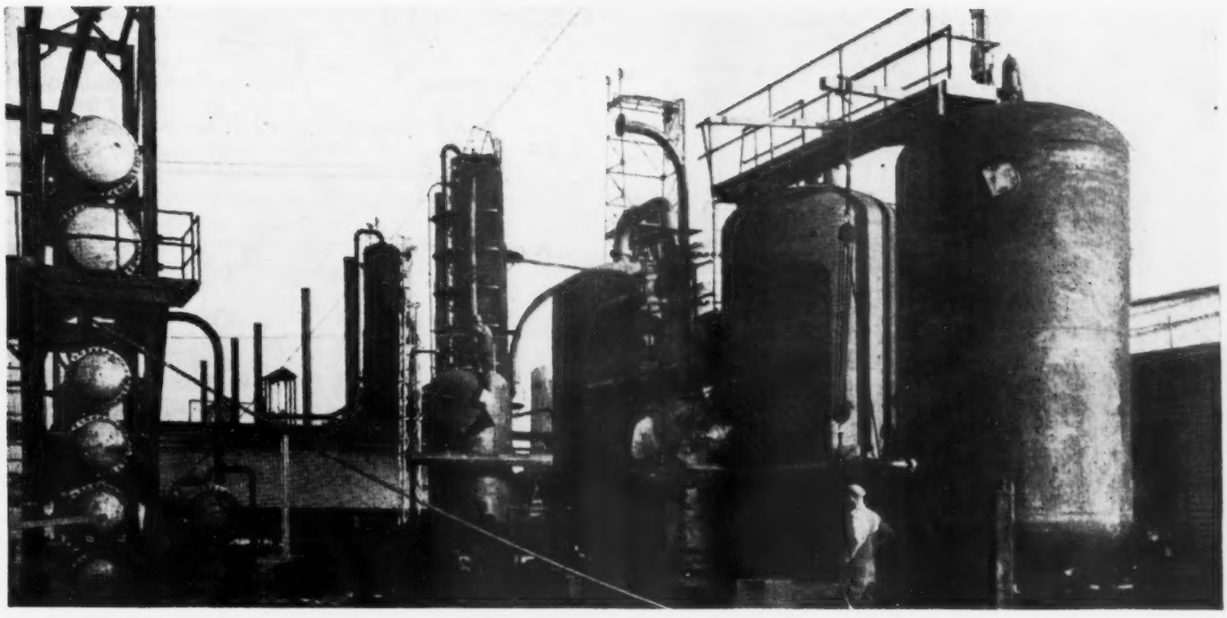


Fig. 4. Structure of 5% Cr-Mo-Si-Al tubing, X100, after 10,000 hours of service



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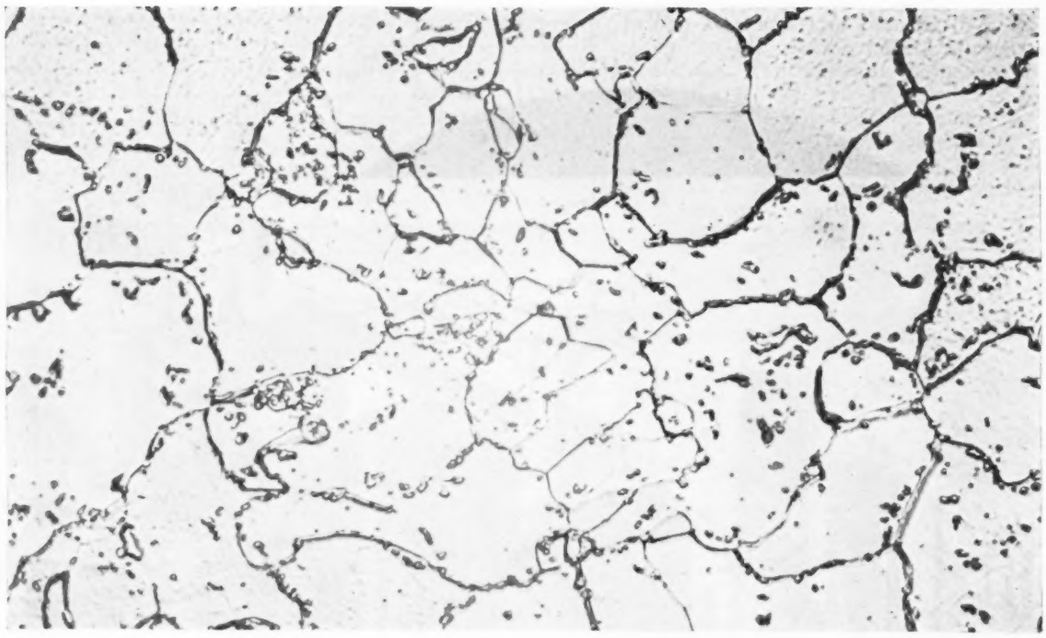


Fig. 5. Same as Fig. 4, except X1000, showing presence of finely divided carbides

TABLE III

Izod and Charpy Values on New Aluminum Alloy Steel

Sample No.	Izod (Ft. Lbs.)	Charpy (Ft. Lbs.)
1	49-45-52	42.5-42.5-42.0-45.0
1	63-63-60	45.0-40.0-44.5-45.0
Average	55	43
2	49-40-45	35.0-41.5-39.0-36.5
2	48-52-50	36.5-35.5-36.5-42.0
Average	47	38

These values indicate ample toughness in the material and prove that the tube did not get brittle in service.

Low temperature Charpy tests likewise show ample toughness in this steel, as will be seen in Table IV.

TABLE IV

Low Temperature Charpy Values

Sample No.	Charpy (Ft. Lbs.) at -25°F.	Average
1	33.5-37.5-32.0-33.5-33.5	34
2	31.5-27.0-35.5-29.0-32.5	31

Figs. 3, 4 and 5 clearly show that this new type of steel exhibits a fine grained ferritic structure with the carbide phase well spheroidized, indicating the stability of the material. Figs. 6 and 7 indicate the high ductility possessed by this steel.

Fig. 6. Cold flattening test of 5% Cr-Mo-Si-Al tube

Another series of long time tests was made on sample strips of 5% chromium-molybdenum-silicon-aluminum steels to determine their grain growth characteristics at high temperatures. The still in which the specimens were located was "on stream" for 1842 hours during the period of the test. Under the test conditions, in one zone the temperature varied between a maximum of 1430° F. and a minimum of 1150° F., averaging about 1340° F. In another zone the temperature varied between 1530° F. and 1360° F., averaging about 1490° F. The test specimens showed no grain growth after exposure to the 1340° F. average temperature, but considerable grain growth was evident in the samples exposed to the average temperature of 1490° F. However, all indications are that the 5% chromium-molybdenum-silicon-aluminum steels are stable up to 1400° F., which is entirely satisfactory for the majority of cases in refinery applications. Aluminum acts like titanium in stabilizing the structure of steels in which it is used.

Thermal expansion frequently complicates design, particularly in the case of the austenitic alloys, where pronounced movement must be expected. However, the new chromium-molybdenum-silicon-aluminum alloys are ferritic and their thermal movement corresponds closely to that of the regular chromium-molybdenum steels. Furthermore, volume changes due to phase changes are not likely to occur in these new steels in service, as the temperatures required for transformation are considerably above those reached even under the most unfavorable operating conditions.

Several years of research and development work indicates that steels containing both silicon and aluminum as alloying elements, such as those herein described, offer a material improvement in high temperature properties over the regular chromium-molybdenum steels at only a nominal increase in first cost. These steels are now being produced by the Steel and Tube Division of The Timken Roller Bearing Co. to the chemical specifications given in Table V.

TABLE V

Specifications of Cr-Mo-Si-Al Steels

Carbon	Manganese	Silicon	Chromium	Molybdenum	Aluminum
.15 Max.	.30 Max.	1.00-1.40	.75-1.25	.45-.65	.60-.80
.15 Max.	.30 Max.	1.00-1.40	1.75-2.25	.45-.65	.60-.80
.15 Max.	.30 Max.	1.00-1.40	2.75-3.25	.45-.65	.60-.80
.15 Max.	.30 Max.	1.00-2.00	4.00-6.00	.45.65	.60-.80

These compositions have been designed for a wide range of applications in the oil refining industry. The use of the 1% and 2% chromium grades is suggested for intermediate temperatures; the 3% chromium grade may economically and successfully replace the standard 4-6% chromium-molybdenum steel.

The 5% chromium-molybdenum-silicon-aluminum analysis has shown a scale resistance approaching that of the austenitic 18-8 steels. While long-time creep data for this type of steel are not completed, a creep strength equal to that of the standard 4-6% chromium-molybdenum composition may conservatively be expected. Indications are that for long time tests the strength of the 5% chromium-molybdenum-silicon-aluminum steel, due to its distinctly higher corrosion and oxidation resistance, will exceed the strength of the regular 4-6% chromium-molybdenum steel. This 5% chromium-molybdenum-silicon-aluminum composition may therefore be considered a substitute for certain high alloy stainless steels and is intended for severe service as an economical choice in applications where corrosion at elevated temperatures is a problem.

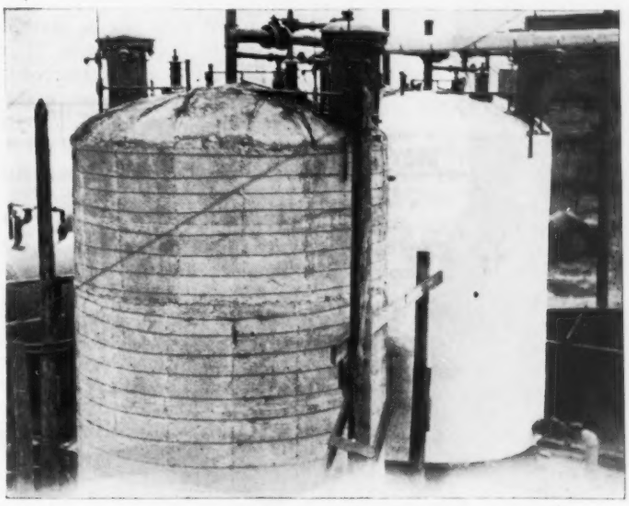
Fig. 7. Cold flanging test of same tube shown in Fig. 6

De-Salting Crude At Michigan Plant

ELECTRICAL de-salting solved the problem, for Pure Oil Co. in its Midland, Mich. refinery, of eliminating severe corrosion and more severe salt deposition in heat exchangers and fractionating tower, a problem that had grown more serious as time went on.

With a Michigan crude which carried 330 to 350 pounds of finely dispersed salt per 1000 barrels, K. B. May, the superintendent, found that older, chemical and mechanical methods were not satisfactory in removing the salt, or reducing it to a value low enough to permit suitable operation of the plant. The b. s. & w. of the crude runs only 0.5 per cent or less, and the salt was tightly held in the crude.

So heavy was the deposition of the salt, especially in the tower, that, at intervals of about ten days, all streams from the tower were stopped for an hour or more and water was pumped into the top of the tower, to wash out the salt deposit in rundowns and on trays, to bring the tower efficiency back to normal. This of course resulted in loss of time and production. Corrosion was also a problem, necessitating the use of liquid ammonia in large quantities to eliminate or reduce the corrosive action on distillation and heat exchange equipment.



Petreco de-salting units installed at Pure Oil Co.'s Milland, Mich., refinery. These units handle 3000 barrels of crude per day, each is equipped with two transformers, "stepping up" the current to the electrodes

Two Petreco de-salting units were installed, each handling 1500 barrels of crude per day. With a consumption of current of seven to eight amperes at 220 volts each, the salt content is reduced from 330-350 pounds per 1000 barrels to 20 pounds or less. The amount of ammonia needed to counteract all corrosive action, insofar as it can be eliminated by ammonia, is reduced by about 40 per cent of the amount used before the installation of the de-salting units was made.

The units operate at about 15 to 20 pounds pressure in the cylinders, which are about 10 feet by 12 feet in diameter. The electrodes are set at a point about one-third the distance from bottom to top of the cylinder, the planes of the steel strip electrodes being about 12 inches apart; this distance can be adjusted to suit the wishes of the operator. Approximately 15 per cent of water by volume is added to the crude, which is heated by exchange with hot oil fractions to 170-190°F., before entering the de-salters. This heated crude-water mixture is thoroughly mixed as it passes through the centrifugal feed pump and enters the de-salter cylinder directly between the electrodes.

Th entrance nozzle is a pipe, cut off smoothly at right angles, against the open end of which a flat disk is held by spring pressure. The pressure of the incoming mixture raises this disk vertically enough to send a thin sheet of oil and water out radially in a horizontal plane, a condition which appears to facilitate the separation of salt solution and crude, under the influence of the electromagnetic field between the electrodes.

The solution of salt in water settles out at the bottom and is drawn off for disposal. The de-salted crude passes out from the top of the units to a settling tank, where any small amounts of water are settled out. This settling tank serves as surge tank, from which the charge pump picks up the crude and sends it to the pipe still for its initial distillation. Being a closed system throughout, no light ends of the crude are lost, and the crude is preheated for the pipe still.

Although no analyses of the salt removed from this crude are available, it is known that the major portion is sodium chloride, NaCl; a smaller percentage is magnesium chloride, which, under the influence of heat decomposes to form hydrochloric acid, HCl, which in turn, causes most of the corrosion of refinery equipment. Still smaller percentages of calcium chloride and other salts are found.

This Midland plant refines several solvent and cleaning naphthas, kerosine, light distillate fuels, and reduces the crude to about 26-28 gravity residual fuel.

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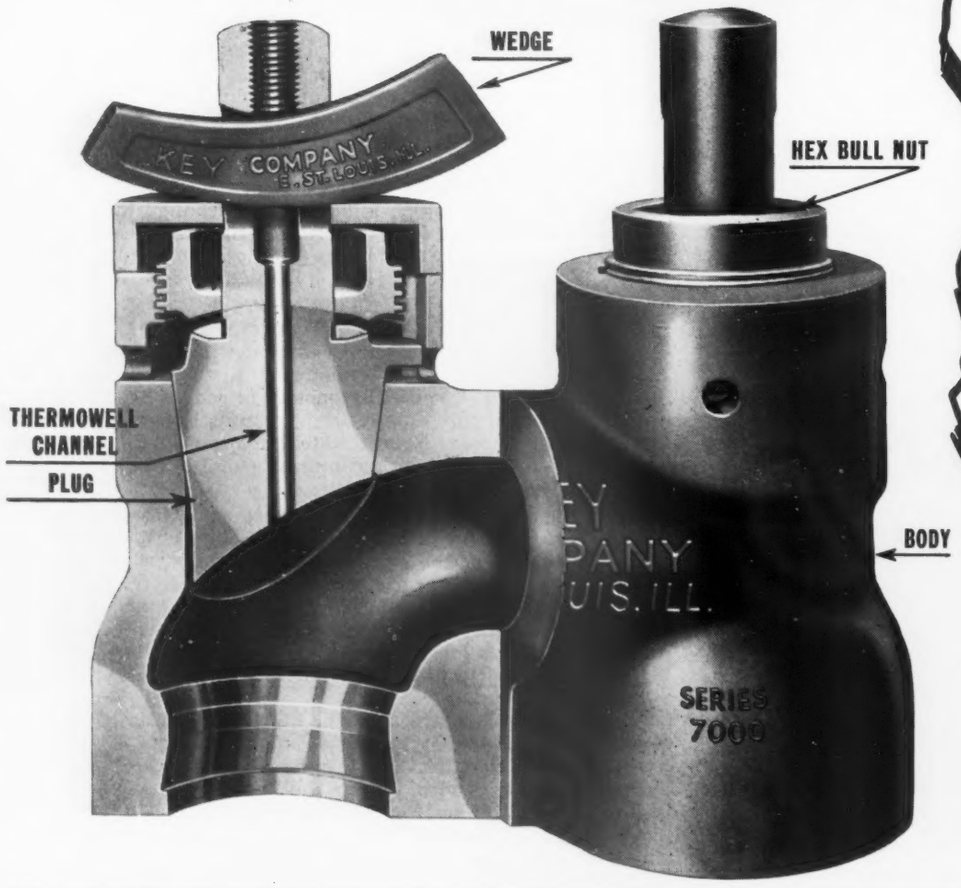

The improved design of this solid body type fitting gives it all the advantages of a streamline-flow fitting, having a full radius port and by-flow deflectors which are attached to the hand hole closure plates.

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To open these fittings, bull nuts are loosened and turned back one full turn. A wedge plate is then slipped over the stud which sits directly over the end of the fitting. Wedge is then driven in slot until closure plate has been loosened from its seat. If coil has not been thoroughly steamed out and explosive gas is present, a slight leakage will show at peep holes. Bull nut may then be retightened for further steaming of coil. This feature is very advantageous from SAFETY FIRST standpoint.

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Aircraft Fuel Specifications—Present and Future*

By W. H. HUBNER[1], GUSTAV EGLOFF[1] and G. B. MURPHY[1]

Abstract

Iso-octane is destined to remain one of the principal blending agents for high octane number aviation fuels. Within three years military services will be using 100 octane number aircraft fuels generally; the same will be used for take-off for commercial aviation, with 87-92 octane number fuels for cruising.

Estimates of potential iso-octane available in the U. S. vary from 155,000,000 gallons to one billion gallons per year, with the higher figure as the more likely potential supply.

Nine high octane number fuels are mentioned, and the effects of most of them as blending agents discussed. Fuel injection does not appear so promising as a practical development as it did a short time ago.

WITH the trend in aircraft design definitely toward engines of higher power output, lower specific fuel consumption, and antiknock requirements of 100 octane number and higher, the question of fuel specification becomes one of increasing importance.

It was believed desirable, therefore, to prepare a paper which would include:

1. The specific fuel specifications of the Military Services, engine manufacturers and commercial airlines in the United States and foreign countries.
2. A discussion of the more important specification items, based primarily on comments submitted by leading aircraft engine and fuel technologists.
3. Expert opinions regarding the future use of high octane fuels.
4. Octane ratings, blending values, and tetraethyl lead susceptibility of a number of high-octane fuels which appear to hold some promise of being commercially useful.

The latest available fuel specifications of the Military Services, aircraft-engine manufacturers, and commercial airlines in the United States are given in Table 1; those for foreign countries are listed in Table 2. For convenience, the specifications in both tables are grouped according to octane rating.

Since it is not the purpose of this paper to set specification limits for the various fuel properties, the discussion and expert opinions are given in the hope that they may be of help in developing more uniform specifications and possibly fewer grades of aircraft fuel.

Antiknock Characteristics

The principal difference between the various grades of aircraft fuel is antiknock value. According to available data, there are 14 different antiknock classifications in the United States and 11 in foreign countries; these range from 58 to 100 octane number.

As indicated in Tables 1 and 2, three different engine-test methods are used for determining octane ratings:

1. Army Method: U. S. Army Specification No. 2-94.
2. CFR Motor Method: ASTM Designation D 357-36 T.
3. CFR Modified Motor Method: British Air Ministry Specifications D. T. D. 224 and 230.

Each of these methods has been described in detail in the literature. However, for convenience and for reference purposes the essential operating conditions of each are listed in Table B—Appendix.

The standard CFR motor method is specified in the United States by all engine manufacturers and commercial airlines and by the Navy Bureau of Aeronautics in all except its 100 octane grade. The Army method is used in all specifications of the Army Air Corps and in the Navy's 100 octane grade. The CFR modified motor method is used only by the British Air Ministry and Imperial Airways; the Military Services and commercial airlines of other foreign countries specify the standard motor method.

Few data are available in the literature by which the three methods can be accurately compared. It is generally believed, however, that cracked fuels, polymerized unsaturated hydrocarbons, aromatics, and similarly sensitive fuels are rated lower by the Army method than by either the standard or modified CFR motor method. On the other hand, leaded fuels consisting essentially of straight-run gasoline or blends of isooctane and straight-run are rated somewhat higher by the Army method; apparently tetraethyl lead is more effective as a knock suppressor at the higher cylinder temperatures in the Army method. Ratings by the modified motor method are slightly higher than by the standard motor method in the case of the cracked and aromatic-type fuels; straight-run leaded fuels show practically no change.

As to the accuracy of the three knock-test methods so far as reproducibility is concerned, F. R. Banks (33) states that "the Army method appears to give superior reproducibility as compared with the CFR motor-method test and is apparently less liable to give variable results in the higher octane range." The following results were presented to "indicate the high degree of reproducibility which it is possible to obtain by this (Army) method."

Laboratory	Octane Rating for Sample No.: 1	2	3
1	100	98	97
2	100	99	98
3	100 + .1cc. T. E. L./gal.	100	98.5

A similar criticism of the CFR motor method is given by E. L. Bass (34): "A word of caution should be given in the interpretation of results obtained with very high antiknock fuels. The exact determination of their octane numbers presents some difficulty as the accuracy of the CFR engine diminishes appreciably in that range."

Although the above statements are in general true for the more sensitive fuels, with proper care and only slight adjustments in bouncing-pin and compression-ratio settings rather remarkable reproducibility can be obtained with the CFR motor method using iso-octane fuel. For example, duplicate samples of "95 octane" commercial iso-octane were rated recently on 9 CFR engines in 7 different laboratories from coast to coast; the maximum

*Second World Pet. Cong., Paris, 1937
[1]Universal Oil Products Co.

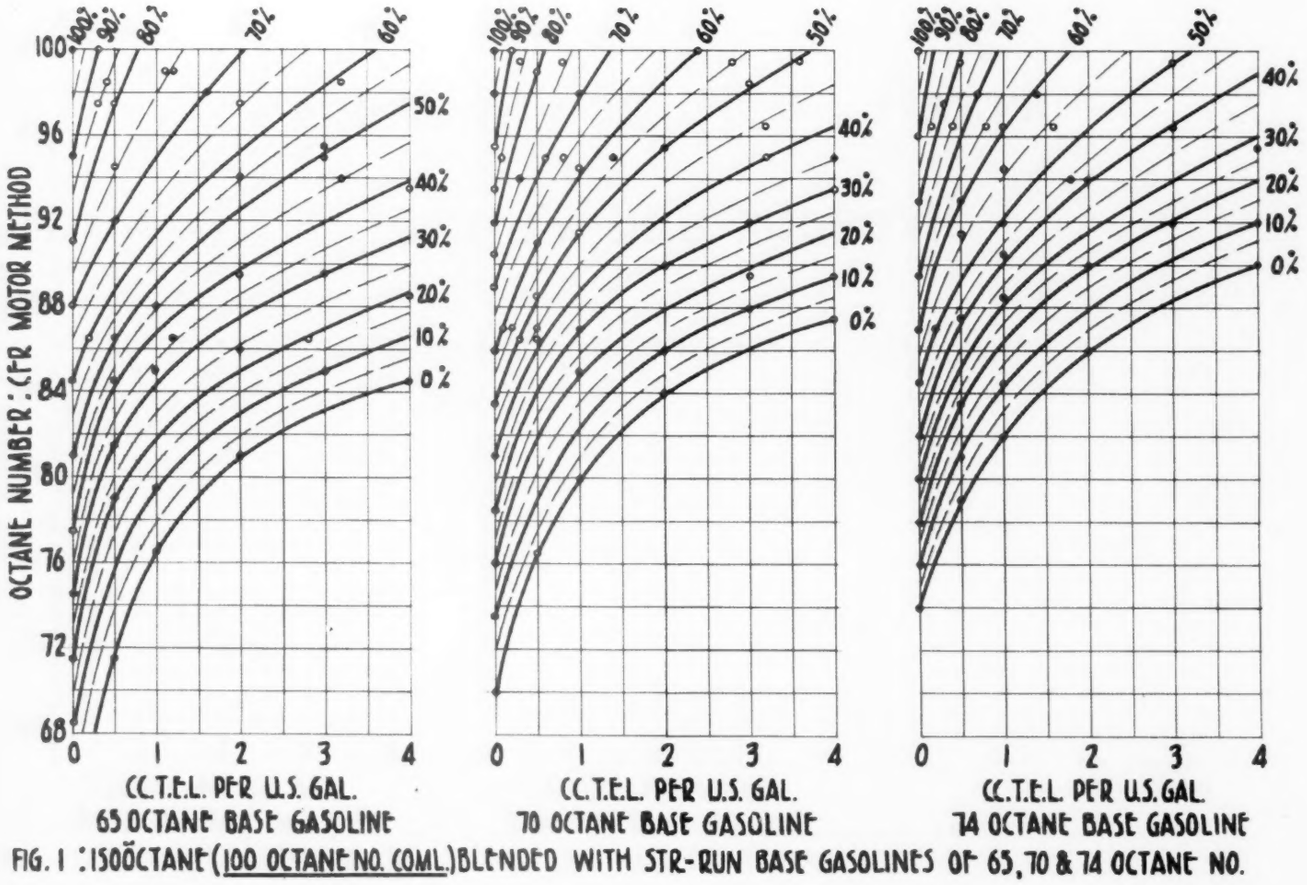

Fig. 1. Effect of blending T.E.L. and 100 O.N., c.p. iso-octane with base fuels of 65, 70, and 74 octane number

spread was less than one octane number and the average deviation ± 0.2 octane number. These results are shown in Table 3. Undoubtedly greater differences would have been obtained between engines had the fuel been of a more sensitive type.

Considerable research work is being done in the U. S. and in Europe in an attempt to develop a more suitable and more reliable test method. Supercharging either the standard CFR engine or the CFR engine equipped with the special Army cylinder appear quite promising as does the substitution of the Sunbury Knock Indicator (35) for the bouncing pin or temperature plug for measuring knock intensity.

WHAT method will rate fuels in accordance with performance in present or future high-output, air and liquid-cooled engines is open for discussion. A rather complete investigation (36) was conducted several years ago in the United States by the CFR Committee, in which three air-cooled and one liquid-cooled engines were employed. This investigation revealed that the CFR motor method correctly rated leaded cracked and leaded straight-run fuels of 87 octane number and lower, but that it slightly overrated benzol blends and leaded natural gasoline. According to certain British engine manufacturers (37), even the CFR modified motor method tends to de-rate the aromatic type of fuel particularly so far as liquid-cooled engines are concerned. On the other hand, the Army method is believed by the Air corps to rate the various types of fuels correctly, at least in the engines now in general use by that branch of the service.

The extensive work now being carried out in the United States by the CFR Aviation Fuels Subcommittee on fuels in the 87 to 100+ octane bracket should soon result in a solution to the problem; this work is being conducted in a number of full-scale aircraft engines and several supercharged CFR engines. Similar work in Europe should be of added value in establishing a standard method for rating high-octane aircraft fuels.

How the various types of fuels will rate in the new high-output, liquid-cooled engines is a subject for conjecture. F. D. Klein (24) believes that "the new liquid-cooled engines might rate the various types of hydrocarbons quite differently from air-cooled engines." C. E. Ekstrom (25) states that "it is fairly well established that they will not rate fuels in the same way." A. L. Beall (26) adds that "the difference between the two types of engines is smaller in this respect than a great many people realize or admit." N. N. Tilley (27) believes that "the two engines will rate the various types of hydrocarbons in the same order since the temperature of cylinder heads and barrels will not be far different." S. D. Heron (28) concludes that "the most advanced designs of liquid-cooled cylinders appear to be much easier on fuel than present-day air-cooled cylinders. Much of the data on liquid-cooled cylinder performance is not obtained under conditions which allow comparison with available air-cooled data. However, Wood (37) and Dubois and Cronstedt (41) have given liquid-cooled cylinder performance data which can be usefully compared with present-day air-cooled performance."

Distillation Characteristics

The distillation limits now specified by the U. S. Army Air Corps and the Navy Bureau of Aeronautics are the result of years of study, in which two things were taken into account; (1) the properties of fuels which have proved satisfactory in service; and (2) the availability of an adequate supply of such fuel at a reasonable cost without presenting any particular difficulties in refining technique.

A number of engine manufacturers and commercial airlines in the U. S. have set similar limits; others have deviated somewhat from these limits.

For example, the military services, several engine manufacturers (Wright and Lycoming) and certain air-

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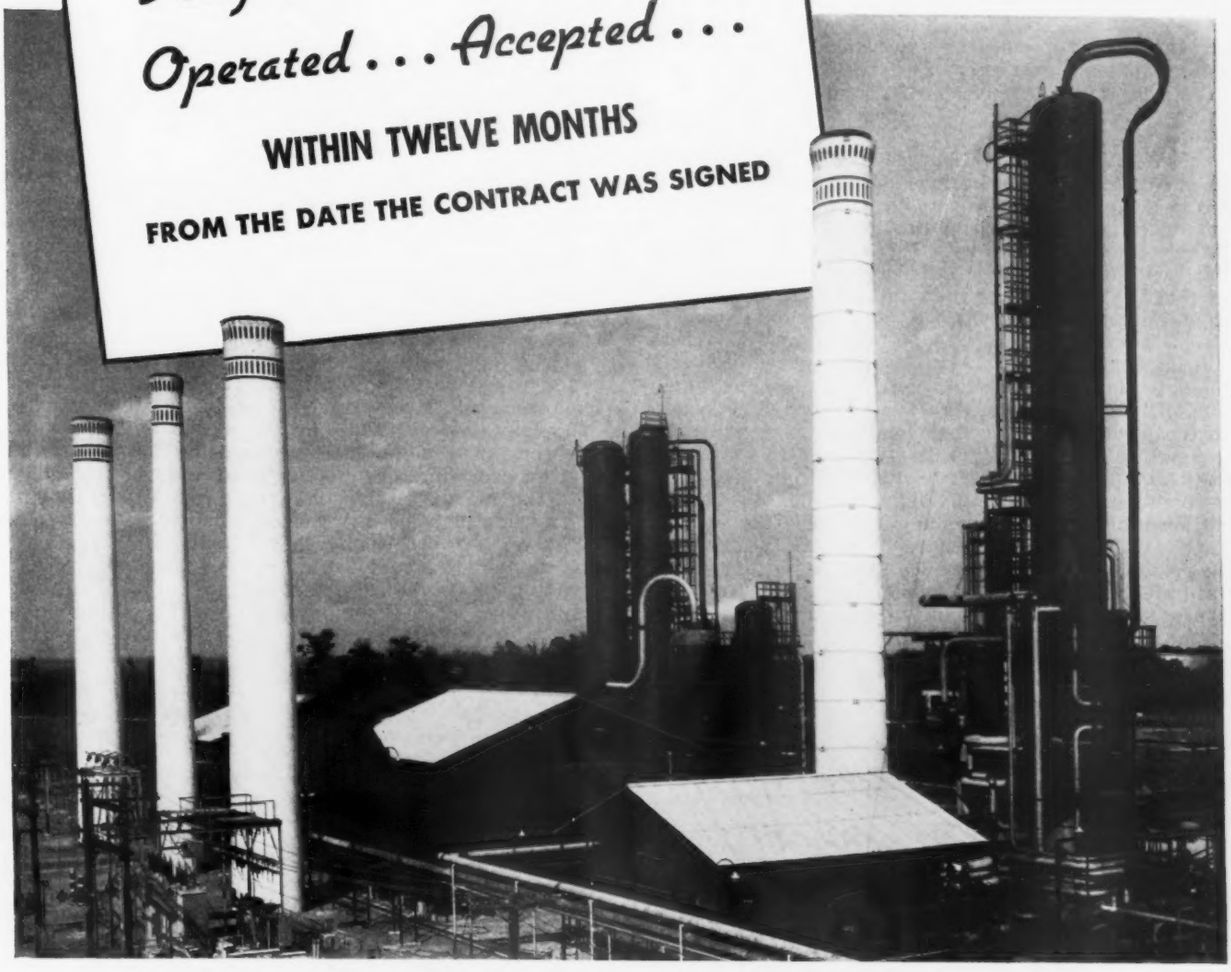

Of interest to executives considering new plant construction is the record of a 14,000 barrel per day combination selective cracking unit designed and built by Lummus for a major oil company. The plant was completed in ten months. On its initial run it was operated continuously for more than thirty days. All guarantees were met and the plant was accepted and taken over by the company within one year from the date the contract was signed.

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lines specify 10, 50 and 90% distillation points of 167, 212 and 275°F. maximum, respectively. Pratt and Whitney and United Air Lines have adopted lower limits of 158, 195 and 231°F. Transcontinental and Western Air deviates still further with limits of 167, 221 and 347°F. American Airlines follows the specifications of the Military Services for the 10 and 50% points but has adopted a lower 90% point of 266°F. and added a 96% point specification of 311°F. maximum.

From the above examples, it will be noted that the 10% point specification varies from 158 to 167°F., the 50% point from 195 to 221°F. and the 90% point from 231 to 347°F. If foreign specifications are taken into account, the spread becomes greater, i. e., 140 to 185°F. for the 10% point and 195 to 230°F. for the 50% point.

THE wide variation in specified 10, 50 and 90% points is related to two operating phases: Distribution and carburetor icing. In order to get adequate distribution with the minimum amount of carburetor heat there has been a tendency to increase volatility. This has been aggravated by the fact that some producers of high-octane gasoline found that it was easier to manufacture this with a 90% point of approximately 230-235°F. and started to supply such fuel. Shortly thereafter some engine manufacturers and airlines proceeded to write volatility requirements of this order into their specifications. On the other hand, certain airlines have found that low 10 and 50% points increase carburetor ice-forming tendencies; as a result, these specifications embody minimum volatility requirements. Although differences in engine design and operating conditions could actually influence the selection of distillation limits, it is believed that the variations in current specifications are based largely on the preferences of the person writing the specifications; in certain cases, they are probably a matter of habit rather than necessity.

Since so many engines now operate satisfactorily with fuel conforming to U. S. Army Air Corps specifications, certainly there can be no necessity for lowering the 10, 50 and 90% points below the 167, 212 and 275°F. now specified by the Air Corps. Reducing the 10 and 50% points in particular makes it more difficult for the fuel refiner to meet the specifications and also increases the carburetor ice-forming tendencies. On the other hand, an increase in the 50% point would make it easier for the fuel refiners to meet the specifications and would also reduce carburetor ice-forming tendencies assuming that the 10% point would remain unchanged.

IN THIS connection, Klein (24) can see "no objection to increasing the 50% point a little above 212° F. This would give slightly poorer distribution, but it is not believed that an increase from 212°F. to 220-225°F. would give any perceptible difference in engine operation. The use of slightly more exhaust heat to the induction system would also compensate completely for this difference, but as already stated, it is not believed that any difference would be noted with the same amount of exhaust heat to the induction system." According to Heron (28), "most modern engines could use fuel with a 50% point of 220-225°F., but in many cases this would necessitate additional carburetor heat to secure smooth running, particularly in cold weather and at high altitude." Beall (26) believes that "the 50% point range of 220 to 225°F. probably would represent an improvement if the fuel is homogeneous and of satisfactory knock value." Ekstrom (25) agrees that "there would be certain advantages in raising the 50% point above 212°F., providing all other requirements can be met."

The use of gasoline injection instead of a carburetor would obviously permit the use of fuels with lower volatility without producing rough running since perfect fuel distribution is accomplished by the injection system. This would apply to the 50% point but probably not to the 90% point. Just when gasoline injection will come into general

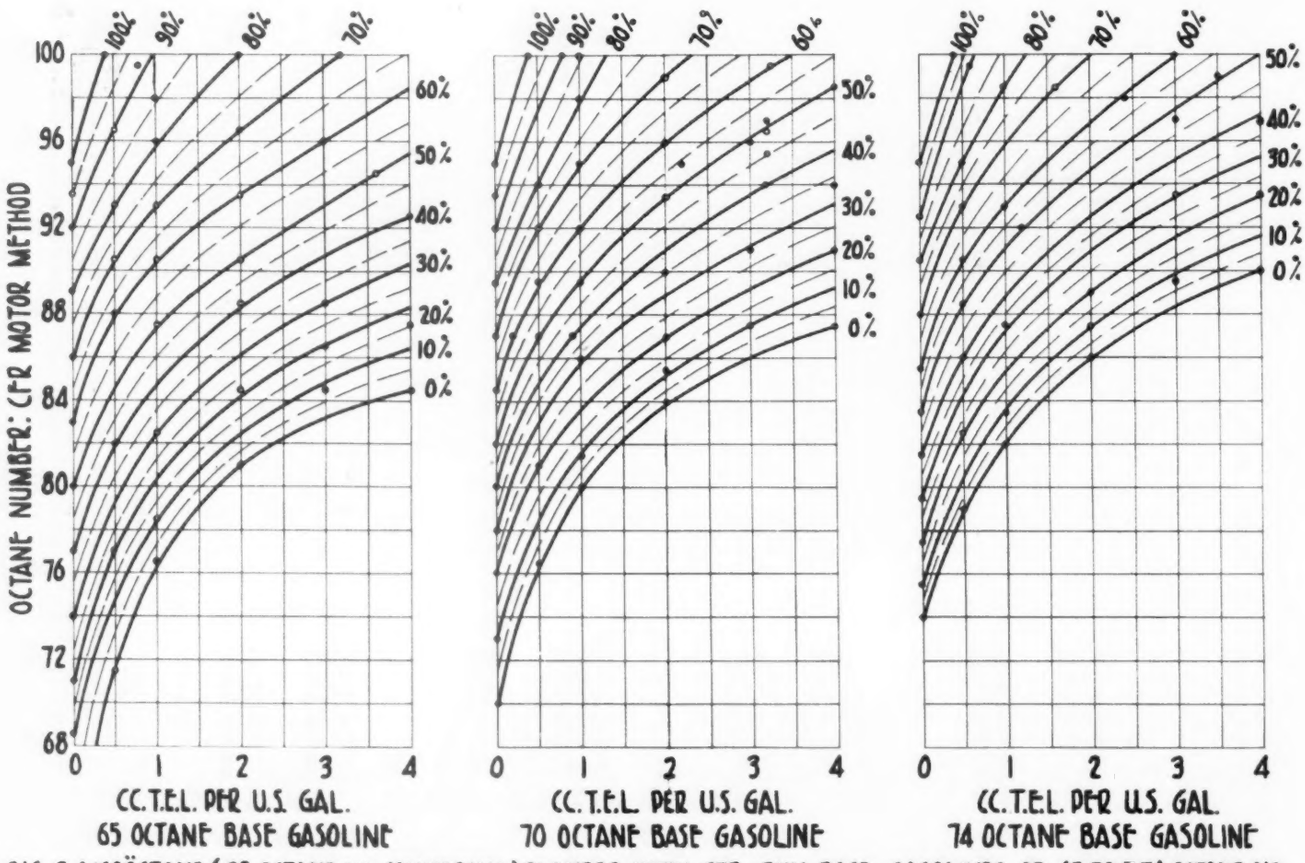

Fig. 2. Effect of blending 95 octane number commercial iso-octane with T.E.L. and base fuels of 65, 70, and 74 octane number

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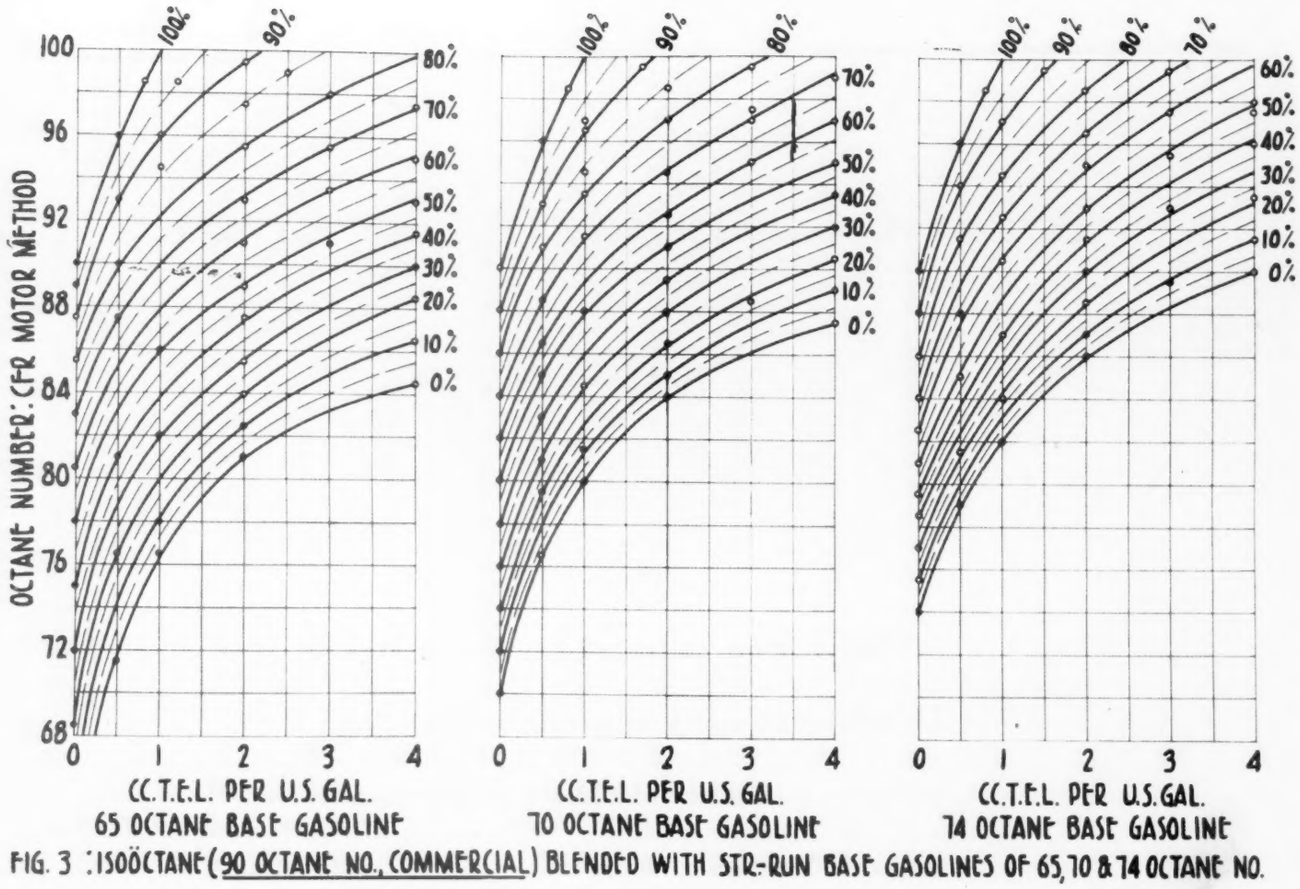

Fig. 3. Effect of blending 90 octane number commercial iso-octane with T.E.L. and base fuels of 65, 70, and 74 octane number

use, if ever, is difficult to estimate. Not many years ago, it was believed by many technologists that by now no carburetor-equipped aircraft engines would be in manufacture, at least for the Military Services. The U. S. Army Air Corps now has many airplanes in service equipped with gasoline injection; likewise certain airlines are using gasoline-injection engines experimentally with fairly satisfactory results. There is no doubt that gasoline injection has advantages such as: (1) better fuel economy and greater power output due to more uniform distribution and higher volumetric efficiency; (2) better engine operation in inverted flight and other drastic maneuvers required in pursuit operations; (3) better performance at the higher altitudes; and (4) elimination of the hazard of ice formation in the carburetors.

SOME technologists still believe that gasoline injection will come into general use in military and transport engines as soon as the technical requirements for control are satisfactorily worked out (27). Others believe that with the recent improvements in certain types of carburetors, gasoline-injection system will find their general application rather remote. The experimental introduction of gasoline injection several years ago has resulted in a great deal of activity on carburetors, and this work promises to remove many of the present disadvantages of the carburetor.

In the U. S., Reid vapor pressures of 7.0 and 7.5 lb./sq. inch maximum are specified; in foreign countries the limits vary from 5.0 to 7.4 lb./sq. inch.

The limit of 7.0 pounds was established a number of years ago by the U. S. Army Air Corps as a compromise based on limitations of fuel system in use at that time. In those days, the majority of vapor-lock troubles did not occur at high altitudes but were the result primarily of the fuel and fuel tanks heating while the airplanes were grounded. Today, however, most trouble occurs at the higher altitudes. With 7 lb./sq. inch vapor pressure, vapor lock is experienced in some airplanes when attaining altitude at a high rate of climb; this condition is not often met in service. An increase in the maximum allowable vapor pressure would increase vapor-locking troubles; this, of course, is not desirable. On the other hand, a reduction in vapor pressure would make it more difficult for fuel refiners to meet specifications. This would result in a reduction in potential supply of fuel and an increase in cost.

From available information, it appears doubtful if gasoline injection would permit the use of higher vapor pressures than now specified; this because vapor lock normally occurs between the fuel tanks and the fuel pump and not in the carburetor.

Acide-Heat and Accelerated Gum Tests

The acid-heat test was originally included in some specifications to compensate for the fact that certain cracked gasolines, containing appreciable percentages of unsaturated hydrocarbons, were over-rated by the CFR motor method and were limited as to storage stability. In most current specifications using the motor method, either the conventional acid-heat or a nitrating acid-heat test are specified. The latter test is employed by one engine manufacturer "to insure that materials of low calorific value or an undesirable concentration of unsaturated hydrocarbons are not included." (26)

The acid-heat test is not a part of the U. S. Army Air Corps specifications. Until recently, the Army accelerated gum test was considered sufficient for the control of unstable fuel. However, recent difficulties with unstable fuel of an unusual composition have prompted an investigation to determine a suitable, more-severe test. According to Klein (24) "some form of modified accelerated aging test is considered the proper solution, rather than to include an acid-heat or nitrating test which would eliminate certain compounds that are not objectionable. However, it

Flexibility Of Operation

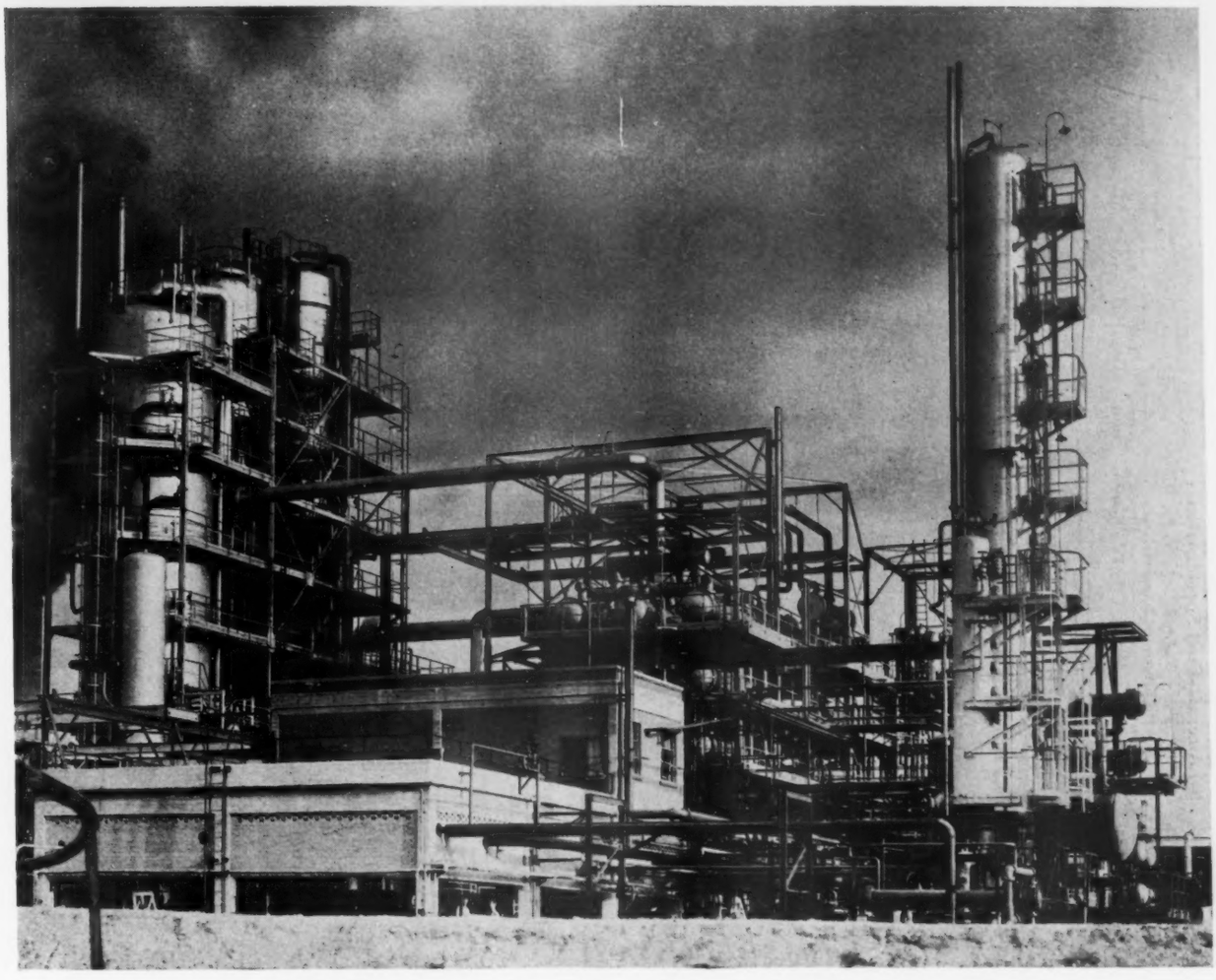

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TABLE 1

Domestic (U. S.) Aircraft-Fuel Specifications:

Specification	Spec. No.	Spec. Date	Knock Test Method	T.E.L. cc./U.S. Gal. max.	Reid Vapor Press. max.	Spec. Grav. max.	Distillation Characteristics °F. Maximum 5%	10%	50%	90%	96%	E. P.	10+50% °F. min.	% Rec. min.	% Loss max.	% Res. max.	Gum(b) mg/ 100cc max.	Freezing Pt. °F. max.	Acid Heat °F. max.	B.t.u. per lb. min.	Sulfur % max.	Remarks
100 OCTANE NO.:																						
1) U. S. Army	2-92	6-20-35	Army	3.0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	—	(c)	0.10	(1)
2) U. S. Navy	M-302	2- 1-36	Army	3.0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	20	(c)	0.10	(2)
95 OCTANE NO.:																						
1) Wright	5805A	2- 3-37	CFR M	4.0 (3.75 min.)	7.0	—	—	167	212 (176 min.)	275	—	—	307	—	2	1	10	—76	(d)	20,500e	0.10	(3)
93 OCTANE NO.:																						
1) American Airlines	933	1-24-36	CFR M	3.0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
92 OCTANE NO.:																						
1) Allison Engineering	(no specific fuel specifications)																					
2) U. S. Army	2-95	6-19-35	Army	6.0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	—	—	0.10	(4)
3) Do.	2-90	6-21-35	Army	0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	—	(c)	0.10	(1)
90 OCTANE NO.:																						
1) Wright	5804	2- 2-37	CFR M	4.0 (3.75 min.)	7.0	—	—	167	212 (176 min.)	275	—	—	307	—	2	1	10	—76	(d)	20,500e	0.10	(3)
87 OCTANE NO.:																						
1) Allison Engineering	(no specific fuel specifications)																					
2) American Airlines	872	1-24-36	CFR M	2.0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
3) Do.	873	1-24-36	CFR M	3.0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
4) Eastern Air Lines	(See Wright)		CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	10	—76	20	—	0.10	(3)
5) Northwest Airlines	87 oct.	12- 1-36	CFR M	3.0	7.0	—	150	158	200	255	275	—	(g)	96	—	2	10	—76	20	—	0.10	—
6) Pratt & Whitney	511	9- 8-33	CFR M	3.0	7.5	—	150a	158a	195a	231a	252a	—	—	96	2	—	10	—76	20	—	0.10	(4)
7) Transcontinental	87 oct.	10- 9-36	CFR M	2.5-3.0	7.0	—	—	167	221	347	—	—	(g)	—	2	2	10	—76	20	—	0.10	(6)
8) United Air Lines	87 oct.	10-15-36	CFR M	3.0	7.5	—	150	158	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(7)
9) Do.	87 oct.	10-15-36	CFR M	3.0	7.5	—	140	150	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(8)
10) U. S. Navy	M-222	1-17-35	CFR M	3.27	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	20	—	0.10	(5)
11) Do.	M-302	2- 1-36	CFR M	0.5f	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	20	(c)	0.10	(2)
12) Wright	5803 E	2-12-36	CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	10	—76	20	—	0.10	(3)
83 OCTANE NO.:																						
1) Braniff Airways	B 1	10-30-35	CFR M	1.5	7.5	—	150a	158a	195a	231a	252a	—	—	96	2	—	10	—76	20	—	0.10	(10)
2) Do.	B 1	10-30-35	CFR M	1.5	7.5	—	140a	150a	195a	231a	252a	—	—	96	2	—	10	—76	20	—	0.10	(11)
3) United Air Lines	83 oct.	10-15-36	CFR M	2.0	7.5	—	150	158	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(7)
4) Do.	83 oct.	10-15-36	CFR M	2.0	7.5	—	140	150	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(8)
5) U. S. Navy	M-222	1-17-35	CFR M	2.29	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	20	—	0.10	(9)
80 OCTANE NO.:																						
1) American Airlines	800	1-24-36	CFR M	0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
2) Do.	801	1-24-36	CFR M	1.0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
3) Do.	802	1-24-36	CFR M	2.0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
4) Continental	(no specific fuel specifications—regular aviation gasoline)																					
5) Eastern Air Lines	(See Wright)		CFR M	2.0	7.0	—	—	167	212	275	—	—	307	—	2	1	10	—76	20	—	0.10	(3)
6) Hanford Airlines	80 oct.	—	CFR M	2.0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	—	—	0.10	—
7) Lycoming	201	11- 9-36	CFR M	2.0	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	—	—	0.10	(4)
8) Northwest Airlines	80 oct.	12- 1-36	CFR M	1.0	7.0	—	150	158	200	255	275	—	(g)	—	—	2	10	—76	—	—	0.10	(4)
9) Pratt & Whitney	507	9- 8-33	CFR M	2.0	7.5	—	150a	158a	195a	231a	252a	—	—	96	2	—	10	—76	20	—	0.10	(4)
10) Transcontinental	80 oct.	10 -9-36	CFR M	1.1-1.5	7.0	—	—	167	221	347	—	—	(g)	—	2	2	10	—76	20	—	0.10	(12)
11) U. S. Navy	M-222	1-17-35	CFR M	1.63	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	20	—	0.10	(9)
12) Wright	5802 E	2-12-36	CFR M	2.0	7.0	—	—	167	212	275	—	—	307	—	2	1	10	—76	20	—	0.10	(3)
74 OCTANE NO.:																						
1) United Air Lines	74 oct.	10-15-36	CFR M	0	7.5	—	150	158	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(7)
2) Do.	74 oct.	10-15-36	CFR M	0	7.5	—	140	150	195	231	252	—	—	96	2	—	10	—76	20	—	0.10	(8)
73 OCTANE NO.:																						
1) American Airlines	730	1-24-36	CFR M	0	7.0	—	150a	167a	212a	266a	311a	—	307a	96	2	2	10	—76	20	—	0.10	(4)
2) Hanford Airlines	73 oct.	—	CFR M	0	7.0	—	—	167	212	275	—	—	307	—	—	2	10	—76	—	—	0.10	—
3) Pratt & Whitney	506	9 -8-33	CFR M	2.0	7.5	—	150a	158a	195a	231a	252a	—	—	96	2	—	10	—76	20	—	0.10	(4)
4) Transcontinental	73 oct.	10 -9-36	CFR M	0	7.0	—	—	167	221	347	—	—	(g)	—	2	2	10	—76	20	—	0.10	(4)
5) U. S. Navy	M-322	1-17-35	CFR M	0 (i)	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	20	—	0.10	(13)
6) Wright	5801 E	2-12-36	CFR M	1.0	7.0	—	—	167	212	275	—	—	307	—	2	1	10	—76	20	—	0.10	(3)
72 OCTANE NO.:																						
1) Continental	(no specific fuel specifications—regular aviation gasoline)																					
71 OCTANE NO.:																						
1) Lycoming	201	11- 9-36	CFR M	1.0	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	—	—	0.10	(4)
65 OCTANE NO.:																						
1) U. S. Army	2-93	6-20-35	Army	0	7.0	—	—	158	230	320	—	—	307	—	—	2	(h)	—76	—	—	0.10	(4)
58 OCTANE NO.:																						
1) Lycoming	201	11- 9-36	CFR M	0	7.0	—	—	167a	212a	275a	—	—	307a	—	—	2	10	—76	—	—	0.10	(4)

TABLE 2

Foreign Aircraft-Fuel Specifications:

Specification	Spec. No.	Spec. Date	Knock Test Method	T.E.L. cc./U.S. Gal. max.	Reid Vapor Press. max.	Spec. Grav. max.	Distillation Characteristics °F. Maximum 5%	10%	50%	90%	96%	E. P.	10+50% °F. min.	% Rec. min.	% Loss max.	% Res. max.	Gum, mg./100cc. Existent max.	Potential max.	Freezing Pt. °F. max.	Acid Heat °F. max.	B.t.u. per lb. min.	Sulfur % max.	Remarks
95 OCTANE NO.:																							
1) Royal Dutch Air Lines	95 oct.	—	CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	(d)	20,500e	0.10	(3)
2) Swissair	95 oct.	—	CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	(d)	20,500e	0.10	(3)
90 OCTANE NO.:																							
1) Russian	Kalinsk	—	CFR M	1.5	—	0.74	—	185	203	—	275	—	—	—	—	—	2-3	—	—	—	—	0.01	

87 OCTANE NO.:
1) Belgian Ministry
National Defense SGI-5-01

87 OCTANE NO.:																							
1) Belgian Ministry National Defense..	SCL 7.01	2- 1-35	—	3.79l	—	0.79	(n)	(n)	(n)	(n)	356a	—	—	96	(n)	(n)	7.5°	7.5°	—76	—	—	0.10	(15)
2) Brit. Air Ministry....	DTD 230	8- 1-33	CFR Mk	3.2j	7.0	0.79	—	167a	212a	302a	—	356a	—	96	2	—	10n	10n	—76	—	—	0.15	(14)
3) Canadian Airways....	87 oct.	—	CFR M	2.5	7.0	—	—	167	212	275	—	—	307	—	—	2	—	10b	—76	—	(c)	0.10	—
4) German Aviation.....	87 oct.	—	CFR M	3.4	7.4	0.76	—	158a	212a	—	302a	329a	—	—	2	—	5u	15u	—76	(x)	—	0.10	—
5) Imperial Airways....	DTD 230	8- 1-33	CFR Mk	3.2j	7.0	0.79	—	167a	212a	302a	—	356a	—	96	2	—	10n	10n	—76	—	—	0.15	(14)
6) Royal Dutch Air Lines	87 oct.	—	CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	(3)
7) Russian Aviation.....	Baku	—	CFR M	1.5p	5.0	0.75	—	185	230	—	329	—	—	—	2	—	2-4	—	—	—	—	0.005	—
8) Swedish Air Ministry	1937 Type	—	—	—	—	—	—	158a	212a	—	320a	—	—	—	—	—	—	—	—	—	—	—	(16)
9) Swissair.....	87 oct.	—	CFR M	3.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	—
85 OCTANE NO.:																							
1) Air France.....	Quality 3	—	CFR M	3.0t	—	0.77	—	167a	212a	302a	—	356a	—	96	—	2	5.0	(v)	—58	—	—	—	(18)
2) French Ministere de l'Air.....	Aero. B	2-11-36	CFR M	3.0q	7.1s	0.78	—	140	212	302	—	356	—	96	—	2	6.0	10	—49	—	—	0.15	(17)
80 OCTANE NO.:																							
1) Canadian Airways....	80 oct.	—	CFR M	1.0	7.0	—	—	167	212	275	—	—	307	—	—	2	—	10b	—76	—	(c)	0.10	—
2) German Aviation.....	80 oct.	—	CFR M	1.5r	7.4	0.76	—	158a	212a	—	302a	329a	—	—	2	—	5u	15u	—76	(u)	—	0.10	—
3) Royal Dutch Air Lines	80 oct.	—	CFR M	2.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	(3)
4) Russian Aviation.....	Gronzy	—	CFR M	1.5	5.0	0.72	—	167	212	—	293	—	—	—	4	—	none	—	—	—	—	none	—
5) Swissair.....	80 oct.	—	CFR M	2.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	(3)
77 OCTANE NO.:																							
1) Belgian Ministry National Defense..	SCL 6.03	6- 1-35	—	0	—	0.79	(n)	(n)	(n)	(n)	356a	—	—	96	(n)	(n)	7.5°	7.5°	—76	—	—	0.10	(15)
2) British Air Ministry.	DTD 224	1- 1-34	CFR Mk	0	7.0	0.79	—	167a	212a	302a	—	356a	—	96	2	—	10n	10n	—58	—	—	0.15	(14)
3) Imperial Airways....	DTD 224	1- 1-34	CFR Mk	0	7.0	0.79	—	167a	212a	302a	—	356a	—	96	2	—	10n	10n	—58	—	—	0.15	(14)
74 OCTANE NO.:																							
1) Russian Aviation.....	Kalinsk	—	CFR M	0	—	0.74	—	185	203	—	275	—	—	—	—	—	2-3	—	—	—	—	0.01	(20)
73 OCTANE NO.:																							
1) Air France.....	Quality 1	—	CFR M	0	—	0.77	—	167a	212a	302a	—	356a	—	96	—	2	5.0	(v)	—58	—	—	—	(19)
2) Do.	Quality 2	—	CFR M	0	—	0.77	—	167a	212a	302a	—	356a	—	96	—	2	5.0	(v)	—58	—	—	—	(18)
3) Royal Dutch Air Lines	73 oct.	—	CFR M	1.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	(3)
4) Swedish Air Ministry	Type B	—	—	—	—	—	—	158a	212a	—	320a	—	—	—	—	—	—	—	—	—	—	—	—
5) Swissair.....	73 oct.	—	CFR M	1.0	7.0	—	—	167	212	275	—	—	307	—	2	1	—	10b	—76	20	—	0.10	(3)
72 OCTANE NO.:																							
1) Russian Aviation.....	Baku	—	CFR M	0	5.0	0.75	—	185	230	—	329	—	—	—	2	—	2-4	—	—	—	—	0.005	(21)
70 OCTANE NO.:																							
1) French Ministere de l'Air.....	Aero. A	2-11-36	CFR M	0	7.1s	0.78	—	140	212	302	—	356	—	96	—	2	6.0	10v	—49	—	—	0.15	(17)
2) Italian Aviation w..	—	—	CFR M	0	—	—	(w)	(w)	(w)	(w)	(w)	320a	—	—	—	2	(w)	(w)	—58	—	—	0.10	(23)
3) Russian Aviation....	Grozny	—	CFR M	0	5.0	0.72	—	167	212	—	293	—	—	—	4	—	none	—	—	—	—	none	(22)
69 OCTANE NO.:																							
1) Swedish Air Ministry	Type A	—	—	—	—	—	—	158a	212a	—	320a	—	—	—	—	—	—	—	—	—	—	—	—

Remarks:

1) "Shall consist essentially of hydrocarbon compounds."
2) "Shall be Iso-octane Fuel consisting of commercial iso-octane and straight-run gasoline. Other hydrocarbon blending agents may be added if proved suitable."
3) "Benzol and similar aromatic hydrocarbons may be added."
4) "Aromatic hydrocarbons may be added."
5) "Only gasoline consisting of a refined fraction of crude petroleum with or without natural gasoline will be considered."
6) "Not more than 25% to be delivered hereunder shall contain in excess of 2.5 cc. T.E.L./gallon. Aromatic hydrocarbons may be added."
7) "Summer Grade—Shall be a straight-run product of crude petroleum."
8) "Winter Grade—Shall be a straight-run product of crude petroleum."
9) "Only gasoline consisting of a refined fraction of crude petroleum with or without natural gasoline will be considered."
10) "Summer Grade—Aromatic hydrocarbons may be added in such quantity that blend will meet all requirements."
11) "Winter Grade—Aromatic hydrocarbons may be added in such quantity that blend will meet all requirements."
12) "Not more than 25% to be delivered hereunder shall contain in excess of 1.1 cc. T.E.L./gallon. Aromatic hydrocarbons may be added."
13) "Aromatic hydrocarbons or saturated hydrocarbons of high anti knock characteristics may be added."

Notes:

a) Temperatures at which respective percentages of distillate are *recovered* (*or condensed*): all other temperatures refer to percent *evaporated*.
b) An 8-ounce sample bottle containing 200 cc. of fuel shall be subjected to an accelerated aging test at 212°F. with oxygen at approximately 100 lb. pressure for 4 hours. The contents of the bottle shall be drained and to remove any insoluble gum the bottle shall be twice washed with 20 cc. of a mixture of c.p. acetone and benzene. On evaporation of 100 cc. of a mixture of oxidized sample and gum solvent, the amount of residue shall not exceed 10 mg.
c) Product of heat of combustion (high value) by specific gravity shall not be less than 13,700.
d) A nitrating test is substituted for the conventional acid-heat test. The principal differences are as follows: In the conventional acid-heat test, 30 cc. of commercial 66° Be. sulfuric acid are added to 150 cc. of fuel sample; whereas in the nitrating test, 20 cc. of nitrating acid (75% conc. sulphuric and 25% conc. nitric acid) are added to 50 cc. of fuel sample. In both cases, the difference in degrees between the initial and final (maximum) temperature shall be recorded as the acid-heat of the fuel. For the nitrating test, the temperature difference shall not exceed 40°F.; while in the conventional acid-heat test, the maximum allowable difference is 20°F.
e) Higher heat value.
f) The basic fuel shall have such lead susceptibility as to attain an antiknock value of not less than c.p. iso-octane when blended with not more than 3 cc. T.E.L./U.S. gallon.
g) Sum of 10, 50 and 90% points shall not be less than 564°F.
h) 100 cc. of fuel is evaporated to dryness in a polished copper dish and the increase in weight of the dish shall not exceed 3 mg.
i) Shall be of such lead susceptibility as to attain an octane rating of not less than 87 octane when blended with not more than 3.27 cc. T.E.L./U.S. gallon.
j) 4.0 cc. T.E.L./Imperial gallon.
k) CFR motor method modified so that the unit is run with a mixture temperature of 260°F.
l) 1.0 cc. T.E.L. per liter.
m) *Existent Gum*: 50 cc. of petrol shall be evaporated in a glass dish on a steam bath; the dish shall then be transferred to an oven maintained at 302°F. and allowed to remain there for 1 hour.

Remarks:

14) "Shall consist of high-grade petroleum prepared from crude petroleum, coal spirit or mixtures thereof. It is permissible to add aromatic hydrocarbons."
15) "Shall be composed solely either of gasoline from topping or gasoline from cracking or a mixture of these two spirits, or finally a mixture of one or both of these with benzol from coal."
16) "Contains 20% benzol."
17) "The fuel is constituted in principal by direct distillation gasolines. However, as a trial, the suitability of which will be judged in each separate case, certain mixtures comprising gasoline from cracking, polymerization or hydrogenation can be accepted."
18) "For air-cooled, high-compression engines. No benzol may be added—all aromatic hydrocarbons must be natural hydrocarbons."
19) "For certain water-cooled engines. Must contain at least 18% of natural aromatic hydrocarbons. Up to 15% of benzol may be added if necessary."
20) "Upon addition of 1.5 cc. T.E.L./gallon, octane rating must increase to at least 90."
21) "Upon addition of 1.5 cc. T.E.L./gallon, octane rating must increase at least to 87."
22) "Upon addition of 1.5 cc. T.E.L./gallon, octane rating must increase to at least 80."
23) "Cracked fuels and benzol or other aromatics can be added provided they meet all requirements."

(Continued on page R-70)

Notes:

Potential Gum: 50 cc. of petrol contained in a glass-stoppered glass flask shall be incubated at 95°F. in the dark for 20 hours. At the end of the time, the contents of the flask, together with acetone rinsings, shall be transferred to a glass dish and the amount of gum formed determined by the evaporative method described in the existent-gum test. The increase in gum yield over and above the existant gum shall not exceed 10 mg./100 cc.
n) I.B.P. not lower than 86°F.; 5-25% distilling between 86 and 158°F.; at least 40% distilling between 158 and 230°F.; maximum of 30% distilling between 230 and 302°F.; maximum of 10% distilling over 302°F.; 4% maximum combined loss and residue; desirable that greatest % should distill in neighborhood of 212°F.
o) Actual Gum: 0.01% by weight. Potential Gum: 0.01% by weight in addition to gum present.
p) 0.9 cc. T.E.L. per liter.
q) 0.8 cc. T.E.L. per liter.
r) 0.4 cc. T.E.L. per liter.
s) 0.5 Kg./sq. cm.
t) T.E.L.: as little as possible.
u) Vaporization residue: When vaporizing 100 cc. of the fresh fuel in a glass dish of 9 cm. diameter, not more than 5 mg. residue should remain; after a normal storage of 6 months, the residue by evaporation in the same specification dish should not amount to more than 15 mg.
Olefins: The fuel should not exceed an iodine number of 3 when tested by the Wijs method.
v) Potential gum: to avoid potential gum the ethylene hydrocarbon content must be less than 2%.
w) *Octane rating*: not less than 67; if possible about 70.
Gum or evaporation residue: 100 cc. evaporated in a water bath in a platinum or glass basin (of about 25 cc.) and dried at 100°C. (212°F.) must not give a residue greater than 0.005 gr.
Bromine index: 3 maximum.
Distillation: at 122°F. not more than 5%
at 212°F. not less than 60%
at 260°F. not less than 80%
at 302°F. not less than 93%

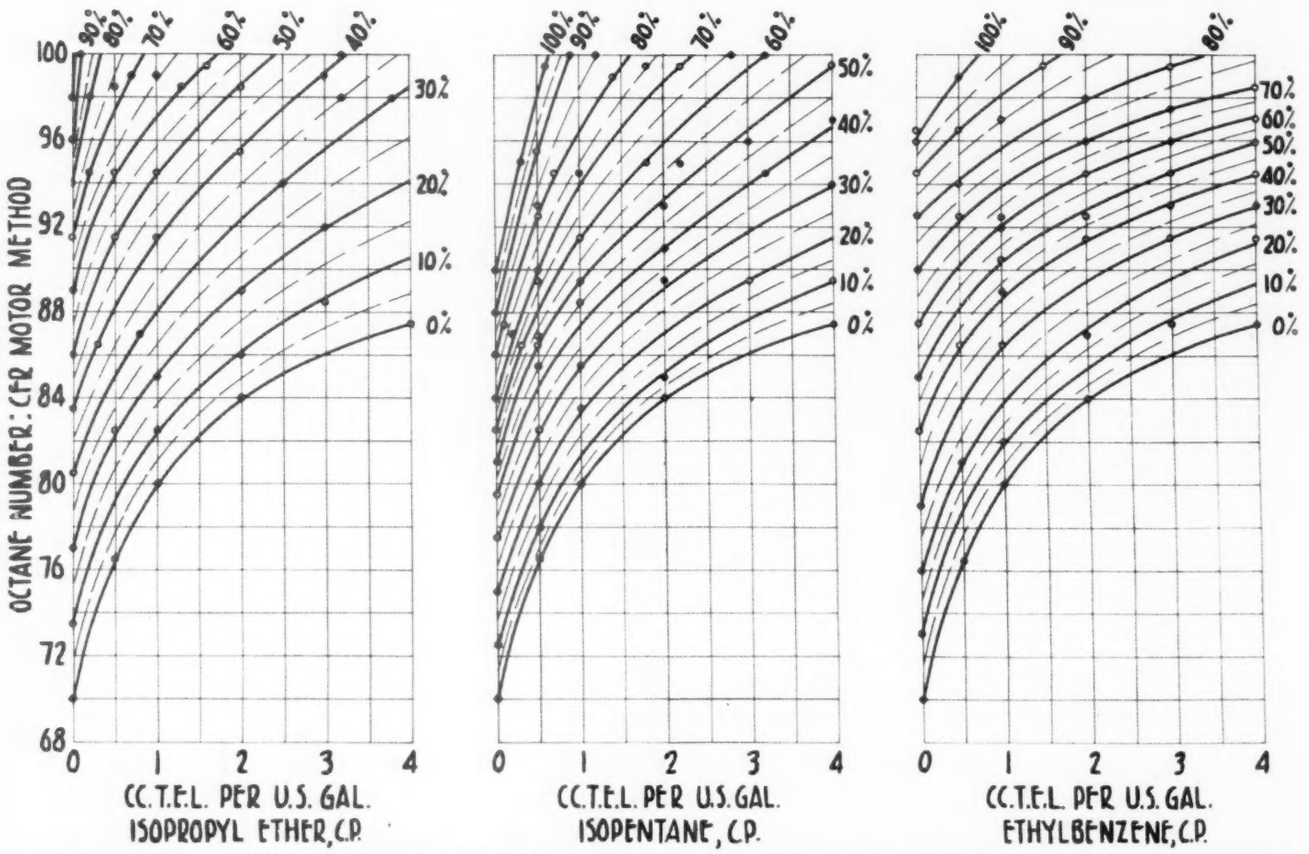

Fig. 4. Effect on octane number of blending iso-propyl ether, isopentane and ethyl benzine with 70 octane number straight-run base fuel

might be necessary for the Air Corps to adopt, temporarily, an acid-heat test to assist in controlling fuel stability until such a time as a satisfactory modified accelerated aging test has been developed." On the other hand, Beall (26) believes that "the nitrating acid-heat test should not be left out of any specification as the accelerated gum test will not predict behavior of some of the unsaturates in storage." Ekstrom (25) agrees that "the acid-heat test should be specified in all cases until a more satisfactory determination of unsaturates can be made. As soon as the test work on a new nitration procedure is completed, this information will be generally distributed and made a part of the Navy's fuel specifications, pending the availability of a more satisfactory test."

Heat Value

For take-off, a fuel of low heat value may be acceptable since take-off fuel consumption is not of particular importance. For cruising, however, a fuel of high heat value is essential since both the range and load-carrying capacity are directly limited by specific fuel consumption. If earning power is taken into consideration, D. P. Barnard (38) concludes that "decreases in energy content of the fuel result in earning capacity losses equivalent to about two octane numbers per one per cent reduction in heating value." Barnard adds that "the use of non-petroleum fuels, particularly those containing oxygen, introduces quite important reductions in heat content. The introduction of the heat-content factor may be regarded as unnecessary for most practical purposes as, in all probability, fuels having energy contents less than gasoline would be used for take-off purposes only, when fuel consumption is relatively unimportant. It is felt, however, that such a picture would be a temporary one at best and that, as engine performances are increased, the time may well come when the exclusive use of high octane-number fuels will be justified economically by making possible very low cruising fuel consumptions. Basically, therefore, it appears that oxygen-containing or hydrogen-deficient fuels, etc., must be penalized as indicated."

Gum Inhibitors

It is believed by some technologists that so long as the fuel meets the gum and acid-heat tests, there should be no objections to the use of inhibitors. Others argue that as inhibitors bring other troubles such as deposits in the engine, and since the fuel in certain cases might be stored for a longer period than expected, there are serious objections to the use of such inhibitors in aircraft fuel.

Use of Tetraethyl Lead

Some technologists believe that the corrosion troubles with leaded fuels are such that some premium should be warranted for non-leaded fuels of like antiknock value. Others believe that with improved engine design and better materials of cylinder and valve construction, few engines built today would warrant paying a premium for non-leaded fuels—at least the premium would be quite small. Apparently few data are available on which to base an accurate opinion. To obtain such data would require fairly large-scale testing with leaded and non-leaded fuels under carefully controlled and similar operating conditions. An excellent comparison could be made by operating one engine of a two-engined commercial-airline plane on non-leaded 87 octane fuel and the other engine on gasoline of equal antiknock value but containing 2 to 3 cc. T. E. L./gallon.

It has been found that the corrosive troubles due to lead vary much more than in proportion to the amount of T. E. L. present, depending in part on the design of the engine and the type of fuel used. In general, it may be said that less than 1 cc./gallon gives little corrosion; 3 cc. gives more than three times as much; and 6 cc. gives more than twice as much as 3 cc./gallon.

Future Use of High-Octane Fuels

To discuss this subject fully, it was believed desirable to quote directly the opinions of expert technologists. A number of these follow:

1. Klein feels that "100 octane fuel will soon come into general use for commercial as well as military aircraft, and that still higher antiknock fuel will soon be available. There is no reason for antiknock value of fuels ever to stand still, any more than that engine development should cease." (24)

2. According to Ekstrom: "There is no question but that high-octane fuels will come into general use within a few years. The exact period will be largely determined by the premium price necessary on such fuels. At present it appears that the iso-octane type of fuel will be most readily adaptable to the engines and conditions of present operation and design." (25)

3. Beall states "that we can use fuel to advantage as high in knock value as we can get it. From our very narrow experience we naturally prefer some type of paraffins to low heat value alcohols or highly unsaturated fuel. I personally expect that a number of different hydrocarbons will be isolated and commercial means found to produce them, which will permit additions to high-octane gasoline, carrying the knock value as high as that of octane or higher with a moderate amount of lead." (26)

4. Froesch believes that "while the tendencies are toward higher octane rating fuels, still there must be a point where the cost of such fuels will render higher octane (number) gas uneconomical. Where this demarcation lies, I do not know." (29)

5. Tilley states that "the Military Service will probably continue to lead in the use of high-octane fuels because of the increased power and performance. Transportation companies will probably find that the increased range of operation for a given tank of gasoline or the ability to decrease their fuel requirements will show more profitable operation with high octane fuel. Of course to obtain the advantages of high-octane fuel, it is necessary that the engines be modified to run with higher compressions or higher amounts of supercharge or both in order to get the maximum benefit from increased octane values. Regarding the type of high-octane fuel that will be used in the future, it appears that the present trend will be continued which includes the use of limited amounts of lead." (27)

6. According to Hazen "100 octane fuels are definitely here and it seems probable that still higher octane fuels can be made commercially available before long. The engine manufacturers are finding the problem of strengthening the engine structure for continuous and efficient operation on 100 octane fuel an exacting one. The rate of application of higher octane fuels will probably be governed more by an engine development limitation than by commercial availability of these fuels." (31)

7. Heron believes that "high-octane (number) fuels will be increasingly used. In the light of present knowledge, it is believed that the isoparaffins have the greatest combination of advantages since they seem to "stand up" best under the widest variety of conditions; in addition, they have a high heat value and are very stable in storage. As far as is known, aromatics have yet to be shown to be equal to the isoparaffins for very low cruising fuel consumption. In a take-off fuel, it is desirable that rich mixtures should produce maximum reduction of cylinder temperature, and in this respect the aromatics are at a disadvantage with paraffinic fuels in some engines. It is quite possible, however, that the aromatics may assume a position to very considerable importance if there should be a reversion to water cooling, which does not appear at present to be altogether improbable. If low cooling liquid temperatures and low mixture temperatures can be obtained without serious increase in drag, the aromatic fuels are quite likely to show to advantage in comparison with the isoparaffins." (28)

8. According to Colyer: "It is expected that high-octane (number) fuels will be in more or less general use

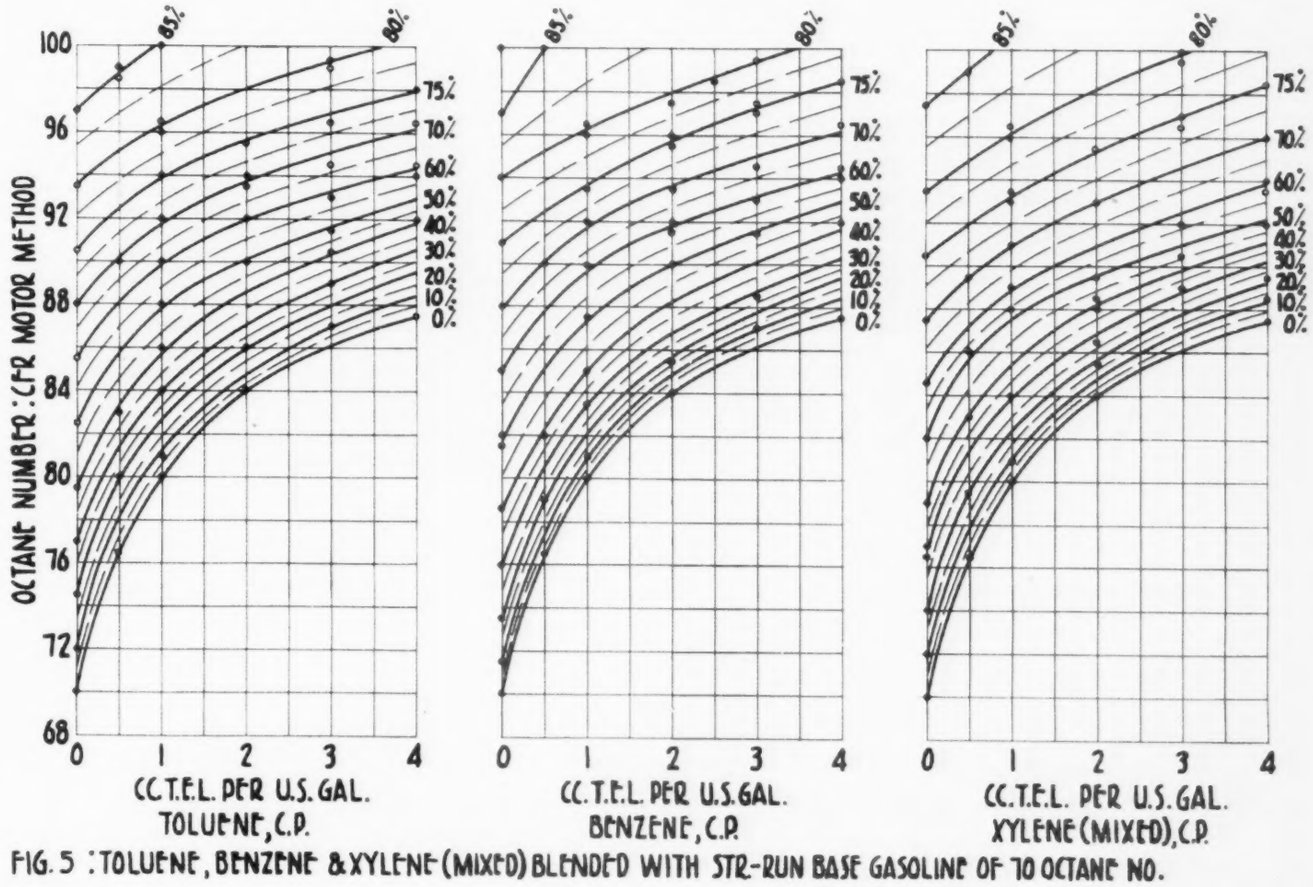

FIG. 5 : TOLUENE, BENZENE & XYLENE (MIXED) BLENDED WITH STR-RUN BASE GASOLINE OF 70 OCTANE NO.

Fig. 5. Effect of blending benzene, toluene and mixed xylenes with T.E.L. and 70 octane number straight-run base fuel

TABLE 3

Reproducibility of CFR Motor Method for "95 Octane" Commercial Isooctane

Laboratory	Octane No.
1.	95.0
2. (a)	94.5
(b)	94.8
3.	94.5
4.	94.3
5.	95.0
6.	95.1
7. (a)	94.8
(b)	95.2
Average	94.8
Maximum Spread	0.9

in aircraft engines within the next year or so. Engine manufacturers and transport operators are working toward this end." (3)

9. Edgar believes that "within the next five years, fuels of 100 octane number will be as generally used as fuels of 87 octane number are used today, and fuels of substantially better than 100 octane number will be used where conditions seem to justify them. These fuels will consist of blends of gasoline, antiknock agents and synthetic products produced from refinery gases." (32).

10. Barnard has found that "while increased earning capacity of an octane number may vary materially (from slightly over two cents to nearly eight cents per gallon), it is clearly emphasized that such improvements are worth so much as to leave little doubt as to the direction octane-number trends must take. For example, current transportation evaluates an improvement of one octane number at 2¼ cents per gallon which in turn indicates that a gallon of 100 octane-number fuel can earn 29.3 cents more under these conditions than can one gallon of 87 octane-number fuel. It is not to be inferred here that the earning power of an existing airplane can be increased materially by simply increasing the octane number of the fuel. The above conclusions apply only when the possible advantages are allowed for in design. No attempt has been made to assign military performance values to fuel improvements. Obviously, increases in octane number may be of great value for this class of service whether used to increase the performance of a combat plane or the range and capacity of a bomber. The conclusion that such improvements can be evaluated higher than for commercial service appears virtually inevitable." (38)

Types of High-Octane Fuels

During the past few years, a number of high-octane fuels have been suggested as being commercially useful. It was believed desirable and interesting to conduct a series of tests in which the octane ratings, blending values, and tetraethyl lead susceptibilities of a number of these could be accurately compared. This was accomplished by blending each in various percentages with a straight-run base gasoline of 70 octane number, with and without the addition of tetraethyl lead. The results are shown graphically in Figures 1 to 5 for the following high octane (number) fuels:

1. Isooctane, "100 octane" commercial
2. Isooctane, "95 octane" commercial
3. Isooctane, "90 octane" commercial
4. Isopropyl Ether, c.p.
5. Isopentane, c.p.
6. Ethylbenzene, c.p.
7. Benzene, c.p.
8. Toluene, c.p.
9. Xylene, c.p.

Additional data for blends of the above three isooctanes with 65 and 74 octane base gasolines are included in Figures 1, 2 and 3.

Octane ratings, blending values, and lead susceptibilities of a number of other high-octane fuels, blended 50-50 with a 70 octane base gasoline, are given in Table 4.

The above results are all in terms of standard CFR motor-method ratings. Had either the Army or the modified motor method been used, the relative and numerical ratings of the various types of fuels, in all probability, would have been somewhat different.

Because of the advantages of the isoparaffin type of fuel for use in aircraft engines of high power output, it was believed desirable to discuss more in detail the results obtained with the various iso-octanes.

Several estimates of the potential supply of isooctane have been given in the literature. According to Egloff (39): "The gaseous hydrocarbons available in the United States are a potential supply of over one billion gallons of iso-octane gasoline a year, or more than 15 times the total consumption of aircraft fuel in the U. S. in 1934." A less optimistic view is held by Buc and Aldrin (40) in their estimate of 155,000,000 gallons per year as the available supply of technical iso-octane.

The figure of 155,000,000 gallons apparently is based only on the quantity of isobutane now available from refinery gases, which limits the production of isooctane accordingly. The figure of over one billion gallons is based on:

1. The conversion of normal butane as well as isobutane to produce iso-octanes.

2. The conversion of the butanes contained in refinery and natural gases to form butanes thereby increasing the supply of charging stock for the production of isooctanes.

In some cases, it has been found more economical to produce iso-octanes of 90 to 95 octane number than those approaching 100. This is due in part to the much higher yields obtained for the lower octane products and to the good lead susceptibility of the various iso-octanes. For example, from a given quantity of gas containing both normal and isobutane, it is possible to produce considerably more 95 iso-octane than 99-100 iso-octane; and still more iso-octane of 90 octane number. The lead susceptibilities are such that the 90 and 95 iso-octanes can be increased to 100 octane motor method by the addition of 1.0 and 0.4 cc. T. E. L./U. S. gallon, respectively.

This difference in antiknock rating is due entirely to the varying proportions of different isomers which are present in the various iso-octane products. For example, the iso-octane used as a standard in knock testing consists exclusively of one isomer, 2, 2, 4-trimethylpentane, and by definition rates 100 octane number. The 90 and 95 iso-

TABLE 4

Octane Ratings, Blending Values, and T.E.L. Susceptibilities of Various High-Octane Blending Agents:

	Octane Number — Cfr Motor Method 50% in 70 Octane Str.-Run + T.E.L.:				
	Straight	0 cc/gal.	1 cc/gal.	2 cc/gal.	3 cc/gal.
1. Isooctane (Commercial)	100	84	92	96	98
2. Isooctane (Commercial)	95	82	90	94	96
3. Isooctane (Commercial)	90	80	88	91	93
4. Isopropyl Ether, c. p.	98	86	94	99	100+
5. Isopentane, c.p.	90	81	90	93	96
6. Benzine, c.p.	100+	82	88	90	92
7. Toluene, c.p.	100+	82	88	90	92
8. o-Xylene, c.p.	100+	79	82	..	84
9. m-Xylene, c.p.	100+	83	89	..	92
10. p-Xylene, c.p.	100+	83	89	..	92
11. mixed-Xylenes, c.p.	100+	82	88	90	91
12. Ethylbenzine, c.p.	96	85	90	93	95
13. n-Butylbenzine, c.p.	...	82	..	..	91
14. tert-Butylbenzine, c.p.	...	88	..	..	97
15. sec-Butylbenzine, c.p.	...	78	..	..	90
16. Isopropylbenzine, c.p.	...	87	..	..	98
17. Mesitylene, c.p.	...	85	..	..	96

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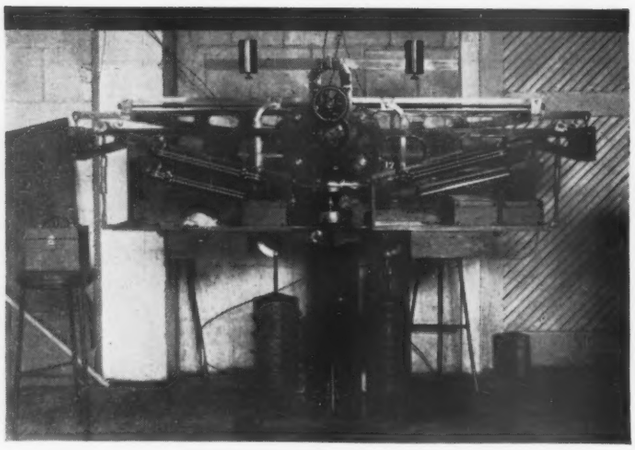

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octanes have lower octane ratings because they consist of mixture of different iso-octanes (isomers), some of which have a somewhat lower octane rating than 2, 2, 4-trimethylpentane.

It is to be noted that the lower octane iso-octanes are not less pure, chemically speaking, than the 100 octane (number) iso-octane and that, while various commercial iso-octane products differ in octane rating, gravity, and boiling range, they are alike in other chemical characteristics such as stability to light, heat, oxidation, etc.

Based on available data, it may be conservatively estimated that there are over one billion gallons of commercial iso-octane of 90-100 octane number potentially available in the United States from refinery and natural gases.

Because of the combination of advantages inherent in iso-octane, namely, ability to "stand-up" best under the widest variety of engine-operating conditions, high heat value, and good stability without the use of inhibitors, iso-octane is destined to remain one of the principal blending agents in the manufacture of high octane number fuels.

It is predicted that within three years 100 octane fuel with less than 3.0 cc. of tetraethyl lead per U. S. gallon will be in general use by the military services. For commercial airline service, 100 octane fuel similar to the above will be used for take-off and 87-92 octane with little or no lead (less than 0.5 cc./gallon) for cruising.

* * *

Remarks

(*Continued from page* R-65)

(1-23, incl.) See Tables 1 and 2 for identification. Private Communication:
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(28) S. D. Heron, Ethyl Gasoline Corp., Detroit, Mich. (March 3, 1937).
(29) Charles Froesch, Chief Engineer, Eastern Air Lines, New York City, (March 8, 1937).
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W. H. Kiley, of Houston, general superintendent of Gulf terminals for the Warren Petroleum Co. (left) and W. K. Warren, president of the company, talking "shop" between sessions of the Natural Gasoline Association of America's convention

E. D. Cumming

Manager of Shell Refinery

E. D. Cumming has been appointed manager of Shell Oil Co.'s refinery at Martinez, Cal. Mr. Cumming, a native of Alabama, has had wide experience in the oil business. Working up from the bottom, he became technical assistant in the head office manufacturing department in San Francisco. He has been assistant refinery manager at Dominguez and Wilmington refineries.

Laboratory Builds Own Room Cooling System

A home-made cooling system that reduces the room temperature 15 to 20 degrees has been constructed by the laboratory force at the Globe Oil & Refining Co.'s plant at McPherson, Kans.

The unit is made up of two old auto radiators, some sheet tin, an electric fan and a few lengths of rubber hose. The tin was used to connect the two radiators into a "wind tunnel." Radiator hose connects the top of the front radiator with the bottom connection of the rear radiator. Another hose connected to the top of the rear radiator carries to the drain pipes the small amount of over-flow water.

Water flows into the front radiator's lower connection through a Bunsen burner hose. Only a small amount of water is required. It circulates first through the front radiator, then through the rear one and then flows into the drain. A sliding door has been made in one side of the tin wind tunnel to permit easy access to the fan.

The unit is placed on one of the work benches, with the rear radiator near a window. When the outside temperature is lower than that inside, the window is opened and the fan draws the outside air through the rear radiator and blows it through the front radiator into the room. On hot summer days all windows and doors are closed and the air in the room is re-circulated through the unit.

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A. S. T. M. Committee D-2 Recommends Acceptance of Viscosity Tests

NEW YORK — Four test methods were recommended by Committee D-2 on petroleum products and lubricants for acceptance and publication as tentative standards at the fortieth annual meeting of the American Society for Testing Materials held recently.

These methods cover kinematic viscosity, conversion of kinematic viscosity of Saybolt Universal viscosity, distillation of plant spray oils and test for vapor pressure of petroleum products (Reid method). A paper by C. E. Headington and J. C. Geniesse on "Method for Converting Kinematic Viscosity to Saybolt Universal Viscosity" was presented in support of the new tentative method on this subject.

In addition to these new tentative standards certain revisions were incorporated in the test for knock characteristics of motor fuels (D 357-36 T) and the standard test for melting point of paraffin wax. Improvements in the procedure for free alkali or free acid in the standard methods of analysis of grease were made.

Tests for dropping point of lubricating greases and for unsulfonated residue of plant spray oils were submitted for publication as information.

During the annual meeting several of the subcommittees of D-2 met also. The subcommittee on corrosion test for lubricating oils reported progress in its work and referred to the paper which had been presented during the year on the relation of oil tests to bearing metal corrosion. The subcommittee on specific gravity approved revisions in the description of the hydrometer to permit the use of other than paper scales. This matter will be referred to letter ballot of the committee.

Subcommittee V on viscosity has been active and committee D-2 approved its recommendations covering several new and revised viscosity-temperature charts. A proposal to publish Kinematic-Saybolt conversion tables and to take immediate action on proposed revisions of the method of test for viscosity by means of the Saybolt viscosimeter (D 88-36) to take care of certain difficulties encountered with cut-back asphalts was also approved.

Ranges for the kinematic charts are from 2 to 20,000,000 centistokes and from 0.4 to 100 centistokes. Temperatures for each range are from —30 to 450° F. Ranges for the Saybolt chart are from 33 to 100,000 Saybolt Universal seconds with a temperature range from —10 to 300° F. and 33 to 100,000,000 Saybolt Universal seconds with a temperature range from —30° to 450° F.

The new subcommittee on aniline point met for the first time and outlined a tentative program of work. Several sections of Technical Committee A on gasoline held meetings including those on gum, acid heat and tetraethyl lead. Progress was reported in improving test methods and programs for future work were outlined.

The section on domestic and industrial fuel oil of Technical Committee C considered several proposals to make changes in the specifications for domestic and industrial fuel oils, but no action was taken in the absence of supporting evidence of a real need for the changes. The section of diesel fuel oils took no action on proposed changes in ash content, carbon residue, cetane number in diesel fuels, but did vote to recommend a requirement that all diesel fuels except 6-D should be free from inorganic acidity or alkalinity.

Two complete sessions of the meeting were devoted to papers and reports on bituminous and road materials. Hillman and Barnett, Shell Development Co., in their paper on "The Constitution of Cracked and Uncracked Asphalts" gave chemical evidence supporting the conclusion drawn from the rheological properties of cracked asphalts, that their greater degree of dispersion as compared with straight-run asphalt can be accounted for by the greater aromaticity of the maltenes.

It was further shown that the components in low-level cracked asphalt probably have average molecular weights lower than that of corresponding components in a straight-run residue. The chemical structure of asphaltenes was discussed with indications that they consist of a combination of cyclic groups of no more than two or three rings condensed together.

In their paper on "Development of Internal Structure in Asphalts with Time," R. N. Traxler. The Barber Co., Inc., and C. E. Coombs, formerly with The Barber Co., now with E. I. du Pont de Nemours and Co., pointed out that the increase in consistency of asphalts with time indicates the development of internal structure. The structure is developed more rapidly in air-blown than in steam- or vacuum-refined bitumens. It is partially or wholly eliminated by heating or mechanical working. It has been indicated that the higher the rate at which internal structure develops, the more marked the deviation from viscous flow.

In asphalt-mineral mixtures age-hardening appears to be chiefly dependent on the bitumen present. Asphalts with high rates of age-hardening and definite deviations from viscous flow give characteristic microscopic patterns when the surfaces are etched with ethyl ether or 86° Baume naphtha. The explanation offered for the increase of consistency with time is that a gradual isothermal sol-gel transformation takes place, the magnitude of which depends on the source and method of processing.

Chemistry Department Divided

PITTSBURGH, July 24.—The department of chemical engineering at Carnegie Institute of Technology will be divided into separate departments of chemistry and chemical engineering beginning with the coming school year.

T. R. Alexander, associate professor of inorganic chemistry, will become acting head of the department of chemistry. W. L. McCabe, professor of chemical engineering, will be head of the department of chemical engineering.

Gas Treating Plant Started

PITTSBURGH, July 26.—The first plant in the east to purify refinery gas by the new Koppers phenolate process is the Philadelphia refinery of The Atlantic Refining Co. The process is adaptable for the recovery of hydrogen sulfide from natural gas and refinery still gases. Purification is said to vary from 95 to 99.8 per cent. This renders the gas suitable for polymerization into liquid hydrocarbons.

Atlantic's plant will recover hydrogen sulfide from 22,000,000 cubic feet a day of refinery gases at 225 pounds pressure. The hydrogen-sulfide may be converted to sulfuric acid.

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Revised Method For Determining Dripping Points of Lubricating Greases

BY WM. W. NIVEN, JR.

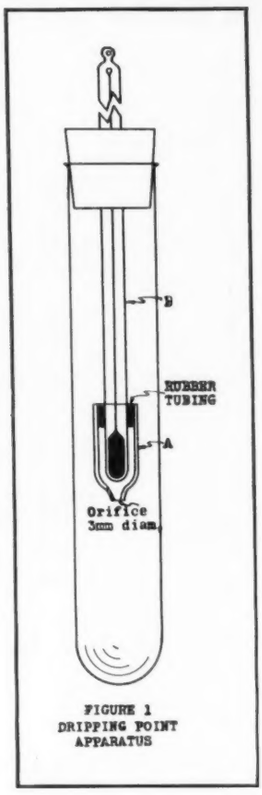


FIGURE 1
DRIPPING POINT APPARATUS

Apparatus used for determining the dripping point of lubricating greases by the Ubbelohde-Niven method

● Greases do not exhibit true melting points but gradual solid-to-liquid changes.

In this method the Ubbelohde method has been changed somewhat, to make it better fitted to types of greases to be tested. A more rapid temperature rise is used in the new method; a bath is heated to about 50° F. above the approximate dripping point, and maintained within plus or minus 5° F. of this starting temperature, and the test assembly is inserted, the dripping point being taken as that shown by the thermometer when the first drop of oil falls from the tube orifice.

Test data on 12 greases are shown; the test is simple and easily made, and results are checked within 5° F.

THERE is no standard method for determining the characteristics of greases when subjected to high temperatures. Greases do not exhibit true melting points but rather a gradual change from the solid to the liquid state. This change may be attributed partly to the breaking away of the mineral oil from the soap and partly to the liquefaction of the soap constituent.

Comparison of various "melting point" methods found in the literature led to the especial consideration of the Ubbelohde method for determining the dripping points of greases. The original method as described by Ubbelohde* has been somewhat altered in an attempt to better fit it to the types of greases to be tested. The complete revised method is as follows:

The glass tube *A* (Figure 1) consists of a section of 10 mm. Pyrex tubing, 2½ cm. long, drawn at one end to an inside diameter of 3 mm. The tube is completely filled with the grease to be tested, care being taken to avoid the inclusion of air bubbles. The bulb of the thermometer *B* is inserted into the grease to a distance just short of the bottom of the tube. All excess grease is then removed. The tube is held in place on the thermometer by means of a piece of rubber tubing. It is necessary that an air hole be left at the top of the tube so that no suction will be created when the grease passes through the orifice. The assembly is inserted into a 1" x 6" Pyrex test tube and held in place with a cork.

As a heating bath a 400 ml. beaker containing about 300 ml. of glycerine is heated to a temperature 50° above the anticipated dripping point of the grease and maintained at that temperature (plus or minus 5° F.) throughout the test. The test tube and assembly are clamped in place in the bath. The dripping point of the grease is taken as the temperature at which the first drop of mineral oil falls from the orifice of the glass tube.

The principle deviation in the revised method from the original Ubbelohde method lies in the rate of heating of the sample. The revised method gives a more rapid rise in temperature, which is a marked improvement in preventing "oozing" of the grease. By "oozing" is meant the tendency of the grease to gradually slip through the orifice before it has really melted. The rise in temperature in the original method was found to be so slow as to allow many greases to "ooze" through the orifice. This was found particularly true of fibre greases having a soda soap base.

In work involving the revised method no attempt was made to determine the dripping points to an accuracy closer than the nearest 5° F. While duplicate determinations on the same grease checked easily within 5° F. any closer dependable accuracy was doubtful.

The revised Ubbelohde method has been used for determining the dripping points of twelve greases. These greases represent both the lime and soda soap types and were compounded for lubrication of construction equip-

*Mitteilungen, 22, 203 (1904).

TABLE I

Sample Number	Soap Base	Dripping Point, °F.	Penetration, worked, @ 77°F.	Sample Number	Soap Base	Dripping Point, °F.	Penetration worked, @ 77°F.
1	lime	230	338	7	soda	167	semi-fluid
2	soda	185	353	8	lime	202	297
3	soda	230	268	9	lime	220	264
4	soda	165	semi-fluid	10	soda	250	semi-fluid
5	soda	195	semi-fluid	11	soda	215	284
6	soda	165	semi-fluid	12	soda	250	semi-fluid

ment at points where comparatively high temperatures might be reached. Table I shows the results of these determinations and also the corresponding work penetrations. In Table II are given the uses for which the various greases were recommended by the producers.

TABLE II

Sample Number	Use for which grease was recommended
1	
2	Tractor wagon bearings; bearings for diesel tractor tread rollers.
3	
4	
5	
6	Chassis lubrication on shovels, tractors, tractor wagons and trucks.
7	
8	Grease cups requiring a hard mineral lubricating grease.
9	
10	Final drives and differentials.
11	Inside bearings and bronze bushings operating at 100 rpm.
12	

As shown by the results in Table I greases Nos. 4, 6, and 7 had the lowest dripping points and were therefore the least resistant to decomposition at higher temperatures. This deduction was confirmed by additional laboratory tests which showed these greases to be deficient in the quantity of soap they contained. Thus, they contained insufficient soap to hold the mineral oil at higher temperatures.

The revised Ubbelohde method is simple and easily carried out. Actual visual observations of high-temperature characteristics of greases can be made. The method gives results which are in accord with the actual behavior of greases at high temperatures and is therefore valuable in correlating the high-temperature lubricating qualities of greases of different types and grades.

Globe Revamps for Higher Gasoline Yields, Higher Efficiency

A NEW unit designed to reduce topped crude to pitch and to permit the separation of cracked residuum from straight run residuum has just been placed in operation at the Globe Oil & Refining Co.'s plant at McPherson, Kan.

New equipment installed for the unit includes a two-coil furnace, an 8 by 24-foot-vapor separator, heat exchanger and condenser, necessary pumps and storage tanks. The vacuum tower was cut out of the cracking plant and tied into the new unit.

Preliminary tests indicate the unit will be extremely flexible and accordingly will permit the making of special refinery cuts which had not been possible under previous plant hook-up. It will also permit the stepping up of crude runs in the neighborhood of 3000 bbls. daily, and a resultant increase in refined products.

The unit also will reduce the fuel oil percentage yields and will eliminate the use of fuel oil diluent by taking advantage of the fact that an entirely cracked product has a lower viscosity.

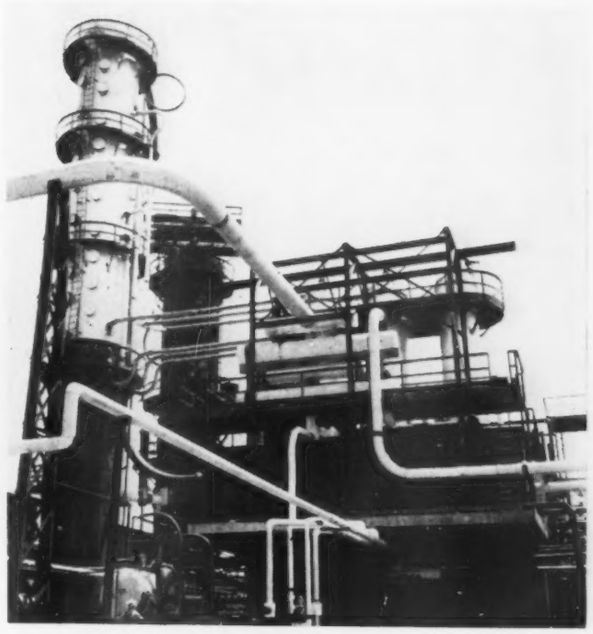
Prior to installation of the new equipment hot topped crude was transferred from the bottom of the flash tower and used as a quenching stock on the two Winkler-Koch cracking furnaces.

Now the hot topped crude is charged directly to the new furnace and heated in one of the series of coils to around 700 to 775° F., then is carried into the new vapor separator.

Not much knock-back is attempted in the separator. There are three decks welded in near the top. Each deck has a number of 2-inch holes into which are fitted 4-inch nipples cut on a tangent.

The vapors are taken off overhead from the separator and passed through the heat exchanger where they are cooled by incoming crude oil. The condensed gas oil stock

790.



The heat exchanger and the condenser used in the first step of the two-coil operation. The tower just back of the plant's crude oil fractionating column in the left foreground is the vacuum tower

Side view of the two-coil furnace showing the lines into and out of the coils

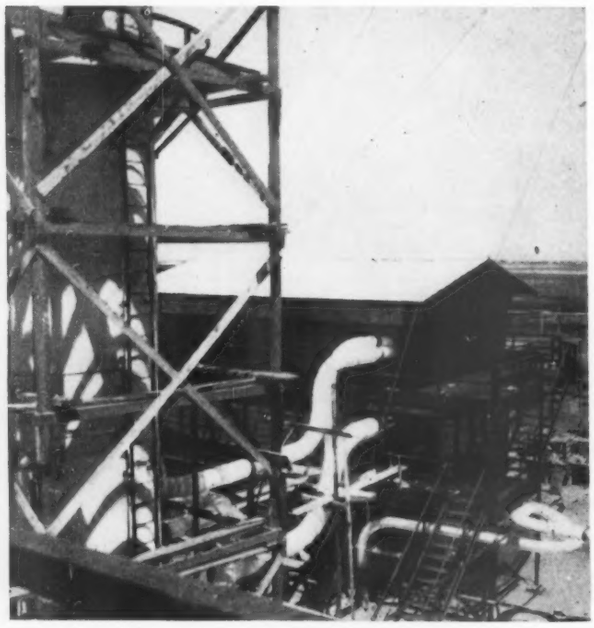
of approximately 32 gravity is then carried hot to the cracking system.

The portion of the gas oil not condensed in the heat exchanger is condensed in submerged coils. This fraction, of approximately 36 gravity, is sent to run down tanks.

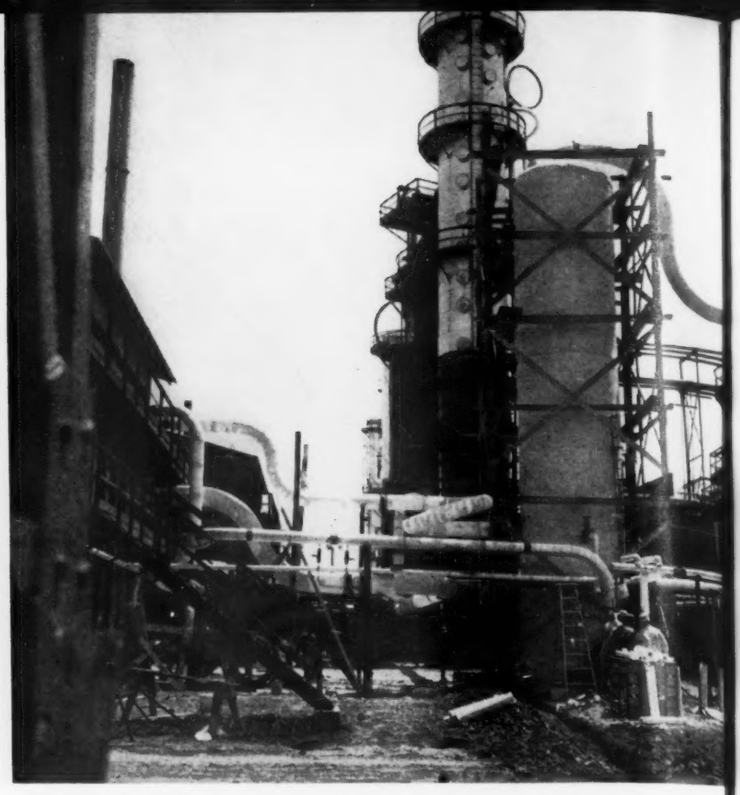
A 14-gravity residuum is taken from the bottom of the new vapor separator and charged to the second series of coils in the new furnace. With temperature raised to 775-800° F. this residuum is carried to the vacuum tower which is operated at a 29-inch vacuum.

Two side cuts of gas oil are taken off the tower and charged to the cracking plant. The tower reduces the residuum to around 3 gravity variable asphalt which is stored in field tanks equipped with steam coils. This pitch is used also as fuel under boilers.

During the preliminary test runs of the new unit the crude throughput for the entire plant was stepped up to slightly over 14,000 bbls. daily.



Looking down at the furnace from the top of the platform holding the heat exchanger and the condenser



Looking down "tower row" at the McPherson plant of Globe Oil & Refining Co. The tower in its scaffolding in the foreground is the new vapor separator. The third from the front is the vacuum tower which has been cut out of the cracking plant and tied into the new unit. The insulated lines are the topped crude charge line into one furnace coil, the discharge line from that coil into the new vapor separator, the residuum line from the new separator to the second furnace coil, and the discharge line to the vacuum tower. And overhead is seen the vapor line from the new vapor separator to the heat exchanger

France Reclaiming Lubricating Oils

of approximately 32 gravity is then carried hot to the cracktions, plus the heavy duty on importation of lubricating oil and other petroleum products, have combined to give birth to a sizable and growing industry in reclaiming and refining used lubricating oil in France, according to Commerce Department reports.

Nine concerns are now engaged in the business on a commercial scale, and a number of firms reclaim oil for their own use. It is estimated that from one to five per cent of the total consumption of lubricating oil in France is subject to reclaiming or refining.

Most of the oil so reclaimed is sold principally for use in agricultural machinery and for the manufacture of ink, it is said. Practically all reclaiming plants are in the vicinity of Paris.

In addition, small filter plants, mounted on trucks, make the rounds of the garages and filter used oil on a percentage basis, but these plants do not actually reclaim or refine the used oil.

Dr. M. R. Cannon Joins Penn State Faculty

STATE COLLEGE, Pa., July 24.—Dr. M. R. Cannon has left the research staff of the Pennsylvania Grade Crude Oil Assn. to join the Chemical Engineering Dept. of Pennsylvania State College. He will continue his researches in various phases of petroleum, particularly the more fundamental aspects, in addition to teaching.

During the past few years Dr. Cannon, working with Dr. M. R. Fenske has placed the accurate measurement of viscosity of lubricating oils on a sounder basis than ever before possible. These two workers have modified the Ostwald viscometer, eliminating some and making corrections for other inaccuracies. The Penn State viscometers are now in use in nearly all leading petroleum companies both in the United States and in Europe.

"State of the Art"

AS SEEN IN THE WORLD'S CURRENT TECHNICAL LITERATURE

By M. G. VAN VOORHIS
N. P. N. Staff Writer

WHILE the effect of various alloys on steel is now general knowledge, there are economic reasons for failure to use steels which have been found to be most ideally suited for the conditions of heat, pressure, and corrosion that are met by tubes in cracking furnaces. Chromium, nickel, tungsten and vanadium, the ingredients of the best known still tubes, are still too expensive to be used except under unusual circumstances.

For example, a steel containing 18 per cent chromium and 8 per cent nickel has given exceptionally long life in this service. On the other hand small additions of chromium, up to two per cent, produce marked improvements over low carbon steel. Above two per cent the rate of improvement is much slower with increase in per cent chromium. This fact has an important relation in the economic balance between life, service and cost, and accounts for recent extensive use of low chrome steels.

* * *

Alloy steels for refinery service are being designed on an economic basis. S. D. Williams. Refiner, March, 1937, *p.* 117.

Economic balance between life, service and cost may be obtained frequently where plain carbon steel tubes are not suitable, yet where 18-8 steel tubes are too expensive, by using an intermediate or low alloy steel.

The effect of various alloys has been pretty well investigated so that the knowledge that under certain conditions chromium provides corrosion resistance, silicon and aluminum increase oxidation resistance, molybdenum inhibits temper brittleness and increases creep strength, and other minerals accomplish other results, can be used in designing an alloy economically to suit the observed conditions.

Maximum efficiency and economy may even be secured by selecting different steels for tubes in different locations in the same furnace.

One of the advantages of low and intermediate alloy steels is their reasonably good resistance to oxidation. Another factor is their quality of swelling or bulging prior to bursting which serves as a warning and tends to prevent accidents.

Tungsten and vanadium are effective for increasing creep strength at 800-1200°F. but their cost is still too high to permit their use in sufficient quantity.

Ratings of A, B, C, and D are given to several steels for four temperature ranges with respect to creep strength, oxidation resistance, and oil corrosion resistance which condense in a small space specification which, with the addition of cost figures, would enable selection of the best steel from this particular group for the conditions to be met. Best results would of course, be met by cooperation of user and designer in solving the technical problems involved.

* * *

Conditions of service determine alloys required in steel. E. R. Johnson, C. C. Snyder, and V. W. Whitmer. Refiner, March, 1937, *p.* 113.

Under some conditions a low-carbon steel "killed" with silicon and aluminum is a sound uniform material for still tubes. Simplest of alloy steels are the comparatively new low-alloy high-tensile steels used chiefly for mobile equipment to reduce weight. They use low carbon to reduce air hardening and are adapted to welding and general fabrication. These alloy steels may in some cases offer better corrosion resistance than carbon steels, but they are not designed for that purpose.

Nickel steels, particularly those containing 3.5 per cent nickel, have good impact strength at low temperature and are used for such low-temperature apparatus as de-waxing equipment.

Most popular of the semi-stainless steels contains 4-6 per cent chromium. These are used mostly in tubes and transfer lines. In sheet form 0.50 per cent of molybdenum reduces age embrittlement at certain temperatures and increases creep strength. A little tungsten and titanium increases physical strength and reduces air hardening.

Instances where stainless steel tubes containing 18 per cent chromium and 8 per cent nickel were still good after six to eight years service, have been reported. With about three per cent of molybdenum high resistance to acids is obtained.

Heat resisting steels may contain up to 30 per cent chromium or 25 per cent chromium with 20 per cent nickel. The chrome-nickel group may contain 80 per cent nickel and 20 per cent chromium. These are used for resistance to scaling at high temperatures in furnace parts, tube supports, and the like. The chrome-nickels possess the most strength, but the straight chromes are said to be most desirable where high sulfur is encountered.

* * *

Changes in low carbon steel from long exposure to heat are different than in short time heat treatment. R. W. Moore. O & G J, March, 25, 1937, *p.* 85.

A general tendency is found for low carbon steel to reach a state of ultimate equilibrium when exposed to long soaking at temperatures experienced in cracking. The carbides (Fe_3C) break up into carbon and iron. The metal is softer, more ductile and has less strength than originally.

At first application of heat the iron carbide or cementite begins to coalesce and becomes spheroidal in form. As heating continues the cementite becomes more spheroidal and has a tendency to migrate to the ferrite grain boundaries. Not until the graphitized stage is reached are the above mentioned changes pronounced.

* * *

Steel improvement by chromium is greatest under two per cent. H. D. Newell. Refiner, March, 1937, *p.* 108.

Steels having two and three per cent chromium content have been widely used recently in tubes for cracking furnaces and vapor lines and to some extent in heat exchangers. The reason is enhanced resistance to oil corrosion and scaling over carbon steel with elevated temperature strength properties exceeding steel with five per cent chromium and 0.50 per cent molybdenum.

Corrosion drops suddenly with the first addition of chromium but more gradually after two per cent is reached. The usual addition of molybdenum, 0.4 to 0.6 per cent, assists creep strength and reduces temper brittleness. To prevent detraction from high-temperature strength, silicon is held to 0.50 per cent, though oxidation resistance would be improved by more.

Three per cent chromium provides greater strength and some margin of improvement in both resistance to corrosion and oxidation. Strength increase at high tem-

perature is secured by increasing molybdenum to 0.80 to 1.00 per cent.

While two per cent chromium steel shows lower tensile strength and higher yield point at room temperature and consistently higher short-time tensile strength than three per cent, the latter shows superior yield strength values at high temperature. Both have satisfactory impact properties at room temperature but at —25°F. fine grain types must be used.

Liquid Fuels, By Harold Moore; D. Van Nostrand Co., New York.

Filling a long-felt want for a textbook type of work on fuels, this volume of 264 pages should prove to be useful especially to the student and the chemist or engineer specializing in the manufacturing or utilization engineering branches of the industry. For the widely experienced engineer, its main use will probably be that of a reference work for various types of data, a considerable amount of which is given within the text and in the appendix.

The work is divided into six parts, as follows:

I. Chemistry of Liquid Fuels.

II. Preparation of Liquid Fuels.

III. The Relation Between The Chemical and Physical Properties of Fuels and Engine Efficiency.

IV. Fuels For Internal Combustion.

V. Fuel For External Combustion.

VI. Significance of Tests and Analytical Methods.

These chapters include discussion of engine fuels from petroleum, coal tar, wood and peat carbonization, alcohols, and synthetic products by hydrogenation, reduction of carbon monoxide and polymerization of hydrocarbons. The chapter on fuels' properties and engine efficiency is devoted largely to a presentation of the C.F.R. knock test method and its indications. The effect on distillation curves of blending coal-tar light products, and also of alcohols, with petroleum distillates is covered briefly, along with an outline of the meaning of different properties, such as calorific value, chemical composition and chemical activity and the meanings of vapor pressure and anti-knock tendencies.

On Diesel fuels particular attention is paid to methods for determining and rating ignition quality; Becker's Diesel Index Number, Boerlage's and Broeze's Cetene Number and Pope's Critical Compression ratio methods are discussed although no mention is made of the Cetane Number method being developed in this country by the Volunteer Committee. Several chapters are devoted to the properties and use of external fuels, with discussion of a number of British fuel burners and accessories. The book closes with an extended discussion of the significance of tests and analytical methods, which will prove useful to those who are gathering fundamental and elementary information on these matters.

The general tone of the book is somewhat academic, and some of the more recent developments in this field are touched on briefly if at all. It contains, however, a large amount of information clearly presented, and will be very useful especially for the young fuel engineer to add to his bookshelves. The price is $8, and is obtainable from NATIONAL PETROLEUM NEWS' Book Department.

* * *

Heat of Reaction in Cracking

Temperature is not of prime importance in its effect on heat of reaction. H. M. Weir and G. L. Eaton. Ind. Eng. Chem., March, 1937, *p.* 346.

Temperature is not of prime importance in its effect on heat of reaction when weight of gas and naphtha produced is taken as the measure of the reaction, results of experiments indicate. It appears that pressure and depth of cracking are of far greater importance.

Viewed from the standpoint of broken molecular bonds, with heat of reaction expressed as Btu. per pound mole of new material produced, the pressure factor drops out, leaving only charge stock and depth of cracking as important variables.

The application of experimental results to plant data has been satisfactory and they have been found adaptable to design, heat balances on operating units, and other purposes the authors state.

* * *

Naphthene and paraffin hydrocarbons are separated by distillation with acetic acid. S. T. Schicktanz. Natl. Bur. Std. Research Paper 967.

Systems which deviate considerably from Raoult's law of solutions may be successfully separated by distillation if a third component is added. Under these conditions the equilibrium is altered by the formation of new azeotropic mixtures. Effectiveness of such separation will depend, however, upon the difference in molecular structures. It is essential also that the added component shall not react with or polymerize the hydrocarbons, and shall be readily and quantitatively removable after separation.

Glacial acetic acid, which is highly molecularly associated, has been found to be very effective as a third component in the separation of constant-boiling fractions of gasoline consisting of naphthene and paraffin hydrocarbons. Although it is low-boiling (118.1°C.), it tends to form azeotropes with hydrocarbons boiling over a considerable temperature range and can be used successfully for the separation of the constant-boiling fractions of gasoline normally boiling in the range 130 to 174°C.

Acid distillation concentrates paraffin hydrocarbons in the fore part of the distillation and the naphthenes in the latter part, but neither group can be obtained in a pure state. It appears that the azeotropes are not truly simple binary mixture, but are either ternary or complex mixtures of binary azeotropes.

* * *

An index of aromaticity is proposed as a valuable characteristic of lubricating oils. G. H. von Fuchs and A. P. Anderson. Ind. Eng. Chem., March, 1937, *p.* 319.

A function of optical dispersion and specific gravity is proposed as an index of aromaticity and the purpose of the authors is to describe a rapid means of determining aromaticity and to show its relation to other oil properties.

On refining by solvent extraction, the aromatic content of an oil generally decreases in proportion to the improvement attained, it is pointed out. The principle and the advantages of the proposed index are discussed and specific dispersion values are correlated with chemical constitution, viscosity index, carbon residue, and oxidation stability of successive extraction stages on several types of oils.

For identification and classification of lubricating oils, the properties of gravity, viscosity index, viscosity-gravity constant, viscosity slope number, refractive index, and others are said to be more or less unrelated and at best only of empirical value. A physical constant related to the chemical constitution is believed to be of value as a characteristic of lubricating oils.

* * *

A calcining process, one of two in North America, converts petroleum coke into 99 *per cent pure carbon. J. C. Watkins. Pet. Eng., Feb.,* 1937, *p.* 190.

Carbon made by the Great Lakes Coal and Coke Co. at Port Arthur, Texas, is suitable for making artificial graphite for carbon electrodes. Oil, gas and moisture are removed from the coke by the process and it is transformed from an electric insulator to a conductor.

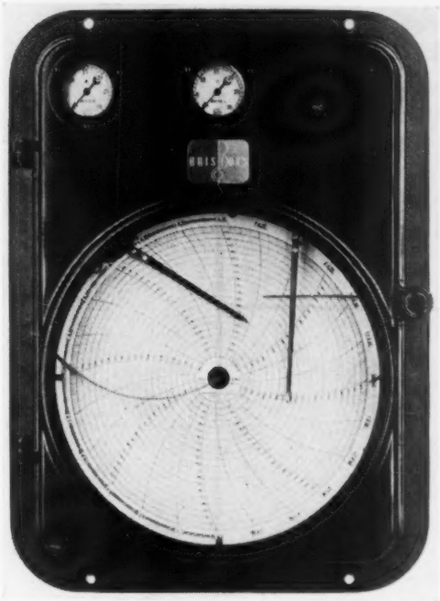
The calcining furnace is 125 feet long and 8 feet wide. Gas jets supply the heat as coke travels downward through the calcining chamber. From the lower end of the furnace it drops downward through a brick chimney into a 125-foot rotating cylinder on a slight incline where it is cooled.

Activities OF EQUIPMENT MANUFACTURERS

Pyrometer Controller

A new round-chart pyrometer controller has been developed by The Bristol Co., Waterbury, Conn. The Pyromaster controller is said to operate on a simplified principle which makes it possible to place the entire mechanism in a standard instrument case.

Standard thermocouples and extension leads are used



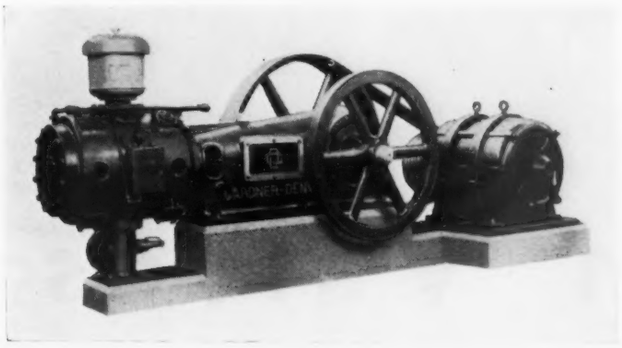
and the instrument is available in both pneumatic and electric types. Automatic self-balancing and self-compensation for cold-end temperature changes are features. All lag is said to be eliminated.

Bulletin No. 489 describes the Pyromaster, which is available as a recorder, recorder with indicating scale, recorder controller, and recorder controller with indicating scale.

* * *

Air Compressor

Gardner-Denver Co., Quincy, Ill., announces an improved single stage, horizontal air compressor for heavy-duty full load service and continuous operation at low power costs. The RX compressor has totally enclosed dust-proof construction without sacrifice of accessibility, it is said. A feature is the electro-pneumatic control for no-load starting. Air supply is automatically adjusted to fit the air requirements, thus giving part-load economy.



* * *

Oil-Flow Measurement

A new development for oil-flow measurement usable for control purposes has been announced by Askania Regulator Co., Chicago. Elimination of all errors in oil-flow measurement attributable to changes in viscosity, temperature, and specific gravity is claimed.

The Askania transometer consists of a fly-ball governor which rises or falls in proportion to variation of oil flow. The vertical force of the fly-ball governor is transmitted to a movable jet pipe through which air passes. Air leaving the jet pipe impinges against a diaphragm, the position of the jet determining the pressure on the diaphragm which balances the centrifugal force of the governor.

* * *

New Solvent Chart

A helpful chart of the properties of various solvents is offered by Carbide and Carbon Chemicals Corp. to solvent users. By consulting the chart, the important properties of 90 commonly used solvents are quickly compared.

On one side of this 26-in. by 20-in. chart is a tabulation of physical properties, and on the reverse side are three graphs showing the relative evaporation rates of different solvents used or usable in formulating lacquers, varnishes, polishes and other industrial products. Use of the chart gives the user a more accurate idea of solvent utility, and should be an aid in laboratory, plant or office. The chart may be obtained by writing Carbide and Carbon Chemicals Corp., Dept. H, 30 East 42nd St., New York City.

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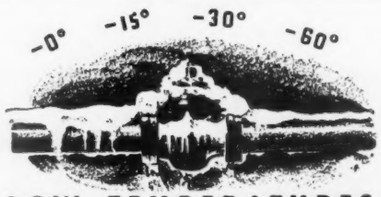
SPEAKING OF *Extremes*

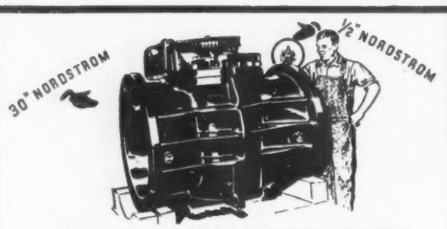
HIGH TEMPERATURES

In an inferno of heat, with temperatures as high as 600°, Nordstrom Valves hold the line tight. "Merco" lubricants have been developed for extra high temperatures under certain conditions. temperatures frequently range from 300° to 600°.



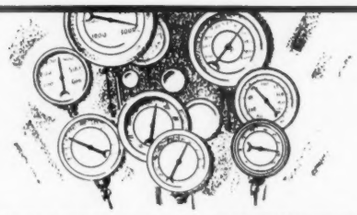
LOW TEMPERATURES

Nordstrom Valves can be subjected to extremely low temperatures. They are operating in plants where temperatures range to -60° Fahrenheit. The valves can always be opened or closed. The plug is protected with patented "Sealdport" lubrication.



UP TO MAMMOTH SIZE

The largest plug valves ever built have been Manufactured by Nordstrom. Shown is 30" Nordstrom in comparison with ½" size. Nordstrom features make possible plug valves of sizes formerly considered impracticable.



MULTITUDE OF PRESSURES

Every Nordstrom Valve is tested to twice its rated pressure. Made in ratings to meet all working pressures. Nordstrom Valves are equally efficient in maintaining a tight seal on vacuum lines.

The all-around serviceable valves

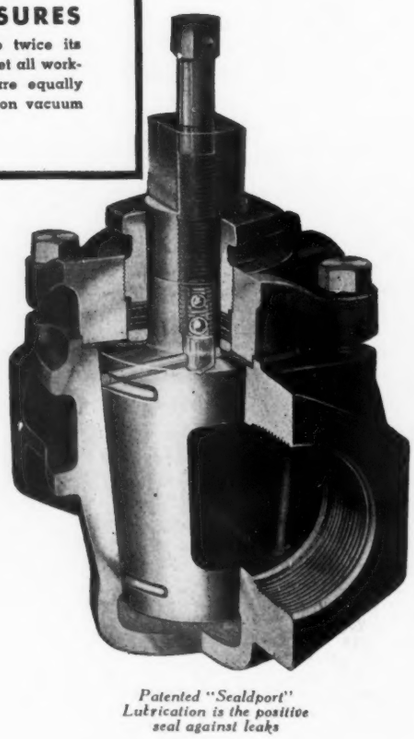
For all extremes of service in refineries, Nordstrom Lubricated Plug Valves are most satisfactory. Nordstroms are the only valves that meet every major need. For replacements as well as for new construction, Nordstroms are the economical application.

CORROSION-RESISTANT. EROSION-RESISTANT. LEAK-RESISTANT

MERCO NORDSTROM VALVE COMPANY

A Subsidiary of Pittsburgh Equitable Meter Co.

Main Offices: Pittsburgh, Pa. Branch Offices: New York City, Buffalo, Philadelphia, Columbia, Memphis, Atlanta, Chicago, Kansas City, Tulsa, Houston, Los Angeles, Oakland. Canadian Representatives and Licensees: Peacock Brothers, Ltd., University Tower Building, Montreal, Quebec.



Patented "Sealdport" Lubrication is the positive seal against leaks

Nordstrom Valves

The Tractor Fuel Problem

(Presented before the American Society of Agricultural Engineers, under the title, "The Tractor Fuel Problem from the Refiner's Viewpoint.")

By M. D. GJERDE*

● The characteristics of various types of tractor fuels, including diesel fuels, now in general use are discussed in the accompanying article and the author shows an existing need for greater distribution of a high octane fuel of controlled uniformity made specifically for use in low compression carbureted engines.

Assurance of a general supply of such a tractor fuel, the author points out, would enable the tractor manufacturer to improve the design of his dual-fuel engines by an increase in compression pressures which would result in higher efficiency for these engines with the use of gasoline as well as with the heavy fuel.

The types of various petroleum products aside from the so-called "tractor fuel," that are used for this purpose are evaluated in the article. The large investment required to stock different tractor fuels necessitates standardization on a single grade, the author concludes.

IN THIS brief consideration of the tractor fuel problem from the point of view of the refiner, it is not the intent that particular concern be given to the details of manufacture of petroleum products for tractor engine fuel, but rather to treat this subject from the viewpoint of the manufacturer and distributor of such products.

Since the demands for definite types of petroleum fuel have induced their manufacture and dictated the extent of their distribution to a great degree, some past history in this connection is of interest.

For many years after the discovery of crude oil, there was no demand for its lightest fractional distillates. Until the beginning of the present century, the great demand was for kerosine, which was widely distributed for lighting purposes. Gasoline was a drug on the market and its disposition, because of its hazardous nature, was a great problem.

In the early tractors, engine design was, of course, influenced by the fact that kerosine was the fuel generally available.

With the advent of the automobile, there was an immediate demand for gasoline, and within a relatively short time it became the principal motor fuel. The excellent distribution of both kerosine and gasoline in even remote rural territories allowed adoption of the dual-fuel type as well as the conventional gasoline type engines for tractor power.

Within the last ten years, there has been a great demand for several grades of petroleum fuel, heavier than gasoline, for use in domestic oil burners. The increasing demand for these fuel oils has had a marked effect on refinery operation, and has required expansion of distribution facilities. At one time, it was thought that availability of a light-grade fuel oil would suffice for both domestic burner and tractor usage. However, new and improved methods of evaluating the burn-

*Standard Oil Co. of Indiana.

ing quality of domestic burner oils have led to the conclusion that, although the volatility requirements may be identical, those products which perform most satisfactorily in tractor engines are not entirely suitable in oil burners.

In recent years, liquefied petroleum gas, butane-propane, has been adopted for fuel purposes. Its performance in internal combustion engines is more satisfactory under heavy load conditions, such as are encountered in tractor operation. However, because of the special adaptations in equipment necessary for its use, and the problems peculiar to its distribution, it is not included in this discussion of tractor fuels.

The adoption of the high-speed Diesel engine for automotive service has also created a demand for particular type of fuel. Although Diesel-powered tractors are not yet used extensively for farm purposes, their use is increasing rapidly in other fields, and is requiring distribution of a fuel having distinctly different characteristics from those most desirable for use in carbureted engines. The characteristics required in a satisfactory high-speed Diesel engine fuel, likewise, are not or, at least, may not be fulfilled by domestic burner oils in general use.

There has been a definite effort on the part of major oil companies to co-operate with the builders of automotive equipment, providing improved fuels and lubricants, to allow and encourage advance in design by the latter. Those in the industry concerned with the manufacture and sale of tractors undoubtedly appreciate the efforts of these oil companies, who pioneered in providing thorough distribution of petroleum products in the rural territories. To provide such distribution of fuels, it has been necessary to install storage facilities at locations governed by concentration of consumption, and frequently only a few miles apart. The large investment involved is apparent when it is realized that an average tank car storage installation represents an investment of approximately $800.

Petroleum Tractor Fuels

The choice of fuel for use in a tractor is dependent primarily upon the design of its engine but, in some instances, may be influenced by other factors such as operating conditions, fuel prices, general economic conditions, convenience, etc. For discussion of fuel qualities, the following general classification may be used:

Gasolines and heavy (lower API gravity—less volatile) fuels for Otto cycle engines.

Diesel fuel oils—for automotive Diesel engines.

Gasoline

Of the three grades of gasoline regularly marketed, namely: premium, regular and third grades, and which differ from each other principally in anti-knock qualities, the latter two are in most general use for tractor power. Satisfactory performance characteristics in a gasoline are indicated by its meeting requirements on the following:

Distillation—balanced volatility, seasonally controlled, to provide: easy starting and rapid warm-up; full power output; and freedom from vapor lock.

Vapor Pressure—along with correct volatility to provide: freedom from vapor lock at elevated temperatures and altitudes.

Octane—sufficiently high to provide: freedom from detonation at the engine compression pressures encountered.

Chemical Stability—resistance to oxidation to provide freedom from gumming.

Chemical Purity—Well refined and of low sulfur content to provide freedom from corrosion.

Heavy Fuels

The properties desirable in fuel, heavier than gasoline, for use in lower compression engines are of great interest because of the preponderance of farm tractor engines of the dual-fuel type. Satisfactory performance characteristics in heavy fuel are indicated by its meeting requirements on the following:

Gravity—low API gravity, consistent with other qualities, to provide high potential heat content per gallon.

Distillation—balanced volatility and suitable limits in boiling points range to provide: uniform distribution of carbureted mixture at reasonable intake manifold temperatures; complete combustion for high realization of heat content and to guard against residual deposits in combustion chamber and excessive dilution of the crankcase oil; full power output and flexibility of operation.

Octane—sufficiently high to provide: freedom from detonation at the engine compression pressures encountered.

Refinement—well refined, of low sulfur content, and uniform in quality to provide: freedom from gumming; freedom from corrosion; and consistency in performance.

Because of its low cost per gallon many tractor operators using heavy fuel have not given great consideration to fuel quality except to the extent that no operating difficulties were encountered in its use. This is particularly true of octane value, which is most important in providing satisfactory ignition quality.

The following kinds of heavy fuel are commonly used in low compression engines:

Kerosine

A straight-run product normally of low octane value. Although kerosine is not the most satisfactory fuel for use in internal combustion engines, a survey of midwestern states shows that approximately 21 per cent of the kerosine sold in those states is used in tractors.

Distillates

A general class of heavy fuels, of varying quality and usually not refined for any definite service. They may or may not possess most satisfactory ignition qualities, since high octane is generally not one of the requirements used for control in their manufacture.

Volatile Type Distillates

Products having gravity and volatility characteristics varying between those of gasoline and typical heavy fuel. They are frequently made by spiking distillates with gasoline and, therefore, do not necessarily have the qualities desired. These fuels, because of their lower boiling range and consequent lower API gravity, do not have as high potential heat value as other heavy fuels. Their advantage in somewhat easier starting characteristics frequently results in their use at engine temperatures too low for their satisfactory performance, resulting in high engine wear and excessive dilution of the crankcase oil.

"Tractor Fuels"

Fuels made specifically for use in low compression carbureted engines. The most satisfactory of these are high octane fuels of controlled uniformity, built to give optimum performance in the average tractor designed for the use of heavy fuel. The superior ignition quality of these fuels is provided by their manufacture from cracked, rather than straight-run, stocks.

When the cracking process was invented by Dr. Wm. Burton, the aim in its use was to obtain a greater yield of gasoline from crude oil. In addition to accomplishing this increased yield, however, the process produced products having lower API gravity, therefore, of greater heat content per gallon than straight-run fuels of similar volatility, as well as superior ignition quality.

Diesel Fuels

Automotive Diesel engines operate efficiently on relatively heavy petroleum fuels. These fuels are of sufficiently high flash point to offer a desirable safety quality and, because of their low API gravity, provide high heat content per gallon. They should be of sufficiently low pour point to allow injection at the low operating temperatures encountered. They should not contain heavy residual portions, as evidenced by excessively high 90 per cent or maximum boiling point distillation temperatures, to guard against combustion chamber deposits. Although high sulfur content is not as objectionable in a Diesel fuel as it is in those used in other internal combustion engines, it is safer to avoid the use of fuels abnormally high in sulfur.

To be satisfactory high speed Diesel engine fuel, however, it is most important that the product possess the proper characteristics as regards:

Viscosity—low enough to allow correct atomization for combustion and high enough to provide necessary lubrication and satisfactory metering in the injection pump.

Cetane—sufficiently high for proper ignition quality to provide ease in starting; smooth running; clean combustion and freedom from detonation.

Cleanliness—minimum sediment and moisture content, to guard against injection pump plunger and cylinder wear by suspended solids.

Since the nature of ignition qualities desirable in Diesel fuel is the opposite of those required for best performance in carbureted engines, straight-run rather than cracked fuels are most suitable.

Conclusion

From the point of view of standardization in fuels for tractors, least concern need be given to gasolines. The wide usage of this fuel in passenger car and commercial equipment has naturally tended to dictate its quality and has demanded its thorough distribution. For tractor use, regular grade, commonly called 70 octane gasoline, is recommended for high compression gasoline engine units. This product, or a reliable brand of third grade gasoline, is also recommended for use in tractors with conven-

Leonard speaks for it

Universal Oil Products Co.
310 S. Michigan Ave.
Chicago, Illinois

Gentlemen:

This is to advise you that the Dubbs two-coil selective cracking unit just put in operation has met the guarantees and we are hereby accepting same.

The operations of this unit are far smoother than anything we had hoped for. We wish to express our appreciation to your operating department for the cooperation they have given us in starting up this unit.

Very truly yours,
LEONARD REFINERIES, Inc.
ALMA, MICHIGAN

Every Dubbscracking unit speaks for itself
Higher yields—better gasoline—bigger earnings
In Michigan—and everywhere

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

tional gasoline engines, for lower compression engines of the dual-fuel type when a light fuel is chosen, and for starting and warm-up of the latter regardless of the fuel used thereafter.

Although automotive Diesel fuel qualities have not been standardized to the same degree, no great difficulty is being encountered due largely to the fact that the manufacture of this equipment is a specialized one, and the individual builders have given consideration to quality requirements of fuels for their engines. Distribution of Diesel fuels, which fulfill the quality requirements specified by the engine builders is being extended as rapidly as sufficient concentration of consumption develops.

In the range of petroleum fuels classed as heavy fuels, for use in the lower compression carbureted engines, however, there is lack of uniformity in the general supply. In territories where "Tractor Fuel" of the satisfactory type previously described is available, it is known to be the preferred heavy fuel. The thorough distribution of one grade of completely satisfactory "Tractor Fuel" should meet the combined requirements of the various tractor engines designed for the use of heavy fuel. The user can, of course, evaluate fuel by its performance, but assurance of a uniformly satisfactory supply depends upon the reliability of the company from whom he purchases.

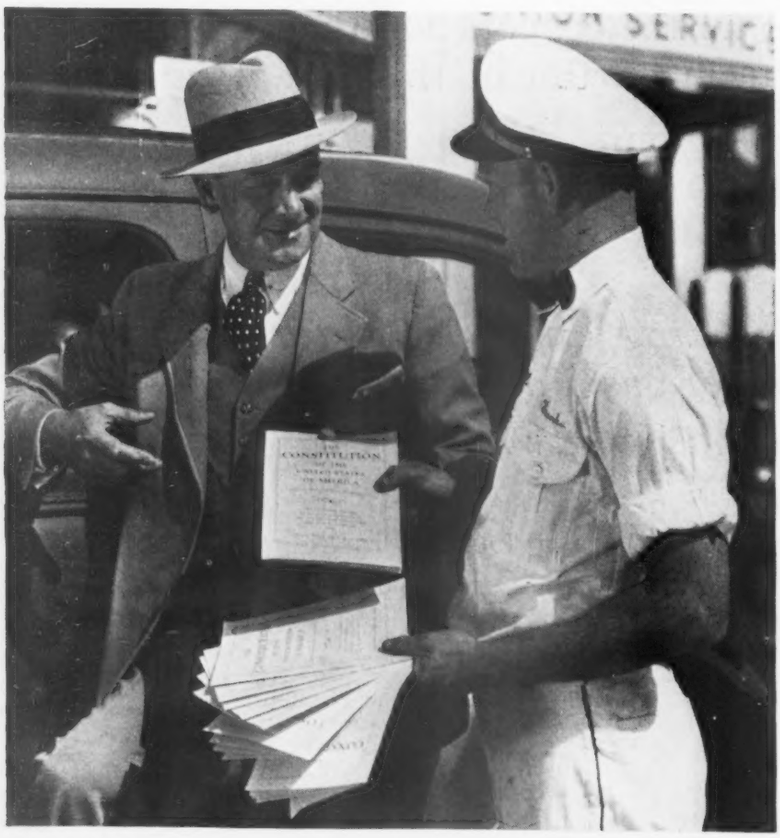
The assured use of a superior type heavy fuel would enable the tractor manufacturer to improve the design of his dual-fuel engines. The permissible increase in compression pressures that would be made possible by the consistent use of this higher octane fuel would result in higher efficiency of these engines with the use of gasoline as well as with the heavy fuel. This possibility is already being developed and its success will have a favorable influence on the future of the dual-fuel tractor.

Union Oil Co. Stations Distribute Copies of U. S. Constitution

THE Constitution of the U. S. and its 21 amendments, together with authoritative historical accounts of circumstances leading to its adoption, has been printed in booklet form by Union Oil Co. for free distribution through its service station outlets on the Pacific Coast. This is being done in commemoration of the 150th anniversary of the Constitution's birth.

This booklet is illustrated with facsimiles of rare original documents in the Huntington Library, San Marino, Calif., and the Library of Congress, Washington. There is an historical foreword, written by Max Farrand, director of research for Huntington Library.

There are also included official reproductions of portions of the original handwritten document, showing signatures of members of the federal convention that drafted it, a preliminary rough draft of the Constitution with marginal annotations of corrections desired by one of the delegates and a copy of the second draft of the Articles of Confederation under which the 13 original states were united before the Constitution was adopted.



A free copy of the Constitution of the U. S. in an attractive booklet form is handed to the customers of Union Oil Co. stations on the Pacific Coast

Prefabricated 3-Room Trailer to be Built

MT. CLEMENS, Mich., July 24.—It had to happen. Within a month a prefabricated trailer with three rooms and bath will be placed on the market, according to A. G. Sherman, president of a leading trailer company.

The new trailer will cost about one half of what a trailer costs today and will be built for use as a permanent home rather than as a "vacation special," Sherman said. Considerably larger than the ordinary tourist trailer, the new trailers will be equipped with attachments to provide city water pressure in the bathroom and kitchenette.

Sherman said the trailers were particularly designed for use as low-cost housing units in real estate subdivisions at the edge of large cities. Jacks at the four corners of the trailer will serve as permanent anchorage.

W. Va. Oil History Is Written by WPA

WASHINGTON, July 24.—Colorful and heretofore unpublished sidelights on the development of the oil fields of West Virginia have been written by Works Progress Administration writers for the American Guide, now being prepared by that organization, according to Roscoe Wright, associate director of information service.

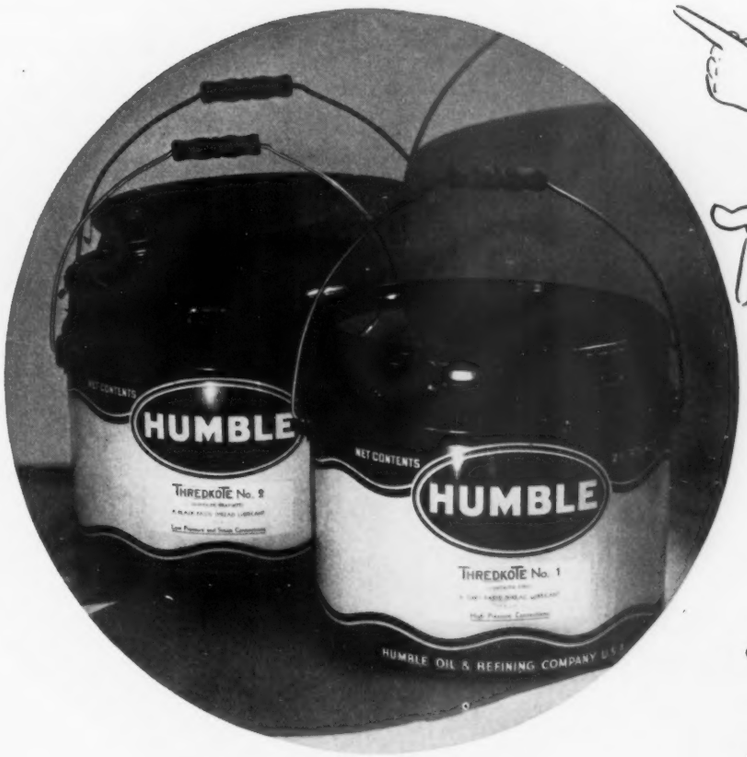
The story tells of the early days in West Virginia, how Dr. Israel C. White, state geologist, with his then laughed at anti-clinal wave theory drilled the first oil well in July, 1889, and brought it in in November, the same year. This was near Mannington, in Marion county. Dr. White died some years ago. Only one of his early associates, Major A. L. Prichard, is alive and it was from him much of the material for this WPA project was obtained.

The American Guide is being prepared under the direction of A. W. von Struve, chief, periodical section.

"Invite" To Oil Expos.

WASHINGTON, July 24.—The House has passed and sent to the Senate for action HJ Res. 385, authorizing the President to invite foreign countries and states of the union to participate in the Oil-World Exposition at Houston, Oct. 11 to 16, this year, and HR 7127, providing a similar authorization in connection with the International Petroleum Exposition at Tulsa, May 14-21, 1938.

A TOOL JOINT'S BEST FRIEND!



HUMBLE

THREDKOTE

(Reg. U. S. Pat. Off.)

HUMBLE

There are two grades of Humble Thredkote available at your local Humble Bulk Station. Thredkote No. 1, zinc filled, and Thredkote No. 2, graphite filled.

As tough and strong as tool joints are, they need a friend to share their hard knocks. And a tool joint's best friend is Humble Thredkote. From the bucking-on machine to the derrick floor, and on down into the hole, tool joints need the helpful three-point service of Humble Thredkote. By lubricating the threads, by sealing the joint, and by preventing rust formation, Humble Thredkote makes your tool joint's job a whole lot easier.

HUMBLE OIL & REFINING COMPANY
HOUSTON, TEXAS

The new station of the Doyle Gasoline & Oil Co., Rochester, which recently opened, is in the left background. The station at the right, located directly on the same corner, is completely surrounded by Doyle's property. Entrance to the Doyle station can be made from either street

Two Stations on Same Corner In Rochester

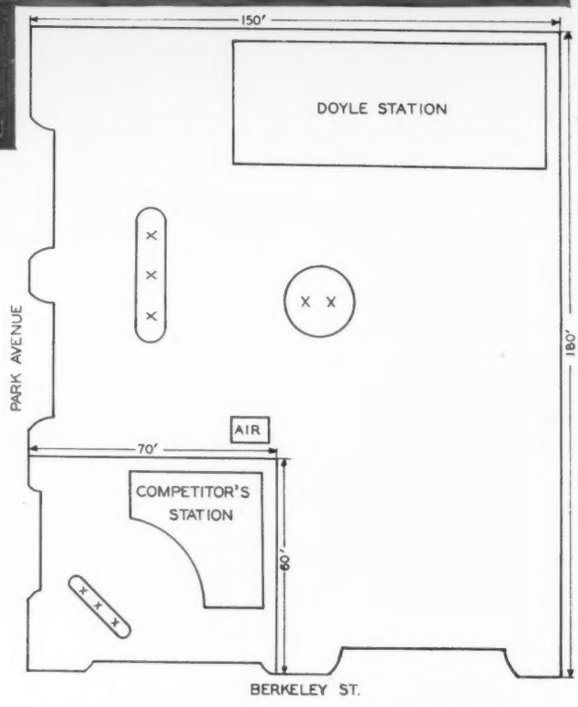


Diagram showing the relative location of the Doyle station to its competitor, both occupying the same corner in a residence section of Rochester

THERE is nothing particularly new about having service stations located on all four corners of a street intersection, but it is news when two competitive stations occupy the same corner.

That is exactly the situation on the corner of Berkeley St. and Park Ave. in Rochester, N. Y., a desirable residential section of the city where, oddly enough, there is a shortage of stations and an excellent potential neighborhood station trade.

In this neighborhood there is also a shortage of suitable property for station locations, a fact which led the Doyle Gasoline & Oil Co. to attempt to obtain this particular corner on which a station was already operating. Failing in this, the next best solution was to obtain the property surrounding the corner station.

The competitor's old station still operates on the corner, while Doyle's new station is located directly behind it, facing Berkeley Street. Doyle's property covers approximately 180 by 150 feet, with the exception of a small square section 60 by 70 feet occupied by the competitive station.

The Doyle property, completely surrounded the other station's property, is L-shaped and has wide entrances on both streets. Wide drives and prominent overhanging curb signs make the station easily identified by motorists on either street. The station property has a 120-foot frontage on one street, with two curb cuts, and an 80-foot frontage on the less traveled street, with one curb cut.

The new station, with a white stucco exterior, is set well back on the Doyle property, making ample space in front of the building for the two pump islands and air tower. One pump island has three computer pumps, and the other island, circular in shape, has two pumps of a similar type. The pump housings are identified with a plain circular design on which the word "Doyle" is placed.

Doyle has spent many years and considerable money in selling the Doyle name to his community in connection with the brand he sells. Rochester motorists now refer to this company's stations as "Doyle stations" without mention of the brand handled.

The station building has an office and display room, and three bays, two of which are equipped with drive-on lifts for lubrication service and the other is for washing. A high pressure hose system is provided for washing.

The Doyle station opened for business July 10, when roses were given to the ladies and jumbo suckers to the children.

Doyle serves over 600 dealers in New York state. Slightly over a year ago he shifted suppliers, and for two weeks during the changeover he sold gasoline from pumps with only the Doyle identification mark on them and no brand indicated. During that time the company maintained its gallonage and today its gallonage exceeds the figure of a year ago.

THE *Modern* SOUTHWEST SERIES 812 . . . A SUPER SALESMAN FOR YOUR DRIVE

. . . it will sell more gallonage for you!

Look at the successful merchants all about you. The grocery stores, the drug stores, the department stores that are doing the business are the ones that are utilizing modern display — modern fixtures. The world's shrewdest merchandisers are using the dynamic selling force of modern, attractive fixtures at the point of sale to set new sales records.

Modern Southwest Pumps make this same selling force available to you. To attract new customers to your station — to keep them satisfied — to increase your gallonage and profits — install the *modern* Southwest Series 812. No pump is a modern pump unless it has the S/W Vapor-Pressure Relief Valve — an exclusive patented feature of Southwest Series 812. This scientific invention keeps Southwest visigauges from emptying due to heat expansion or fouling of the air eliminator valve. Meters and pumping units cannot vapor or hydraulic lock. Series 812's simplified mechanism assures a long life of trouble-free operation. It is America's most advanced, most modern pump . . . a super salesman for your drive. Put Southwest Series 812 on your islands — they'll put extra profits in your bank account. Write for free information on this revolutionary pump . . . NOW.

Write Today for full information

SOUTHWEST PUMP CO.

MANUFACTURERS AND DESIGNERS • SINCE 1916

BONHAM — TEXAS

SOUTHWEST PUMP COMPANY,
Dept. N-737 Bonham, Texas.

Without obligation, tell me about SOUTHWEST 812's.

*Name*_____

*Address*_____

*City*_____ *State*_____

(PASTE ON PENNY POSTAL)

A portion of the Engineering Department, devoted exclusively to actual engine tests.

The only complete spark plug service unit. Tests, cleans all makes and sizes of spark plugs. Pays for itself in increased sales. Attractively priced. Ask your jobber.

Champion's Unequaled Research and Engineering Assures You The Finest Product

To you as a dealer, one of the most vital features that Champions afford from a sales standpoint, is the unequaled research and engineering back of the product. Champion laboratories and engineering departments have no equal in the spark plug field. Constant research, experiment and testing keep Champions everlastingly in advance of the field.

The Champion Spark Plug Company realizes that to continue to be the leader in spark plugs the world over, they must continue to develop new designs and materials.

The most recent result of this policy is the development of the Sillment seal which, for the first time, insures absolute gas-tightness for the useful life of the spark plug.

Champions must at all times meet the severest requirements, give longer effective life, give more satisfaction and pleasure to automobile operators, and lastly—make greater profits for you who sell them.

CHECK AND CLEAN SPARK PLUGS WHEN YOU CHANGE OIL

How Classen "Brings Em In" Despite Station Location

THE service station that Leonard Classen has been operating at Newton, Kans., because of its location, seems to be the exception to the generally accepted merchandising rules. However, when you talk with Classen, you find out that it is really the strict following of good principles in selling that has allowed him to overcome a handicap in the location of his station. The town itself has a population of 10,500.

The station's location, for example, is far from desirable from a merchandising standpoint. It is on a U. S. highway, but not on a corner. A competitor's station has the corner location adjoining Classen's station, while on the diagonal corner is another competitor's station.

A motorist approaching from one direction cannot see Classen's station until he is almost even with it because a church obstructs his view. Approaching from the other direction a motorist has to negotiate a sharp left hand turn just before drawing abreast of the station, and is very likely, in his concentration upon the task of getting around that corner to think Classen's station and that of his competitor are one and the same.

Then there is the matter of getting into Classen's station. The street in front of the station has deep curbs and a high center. This causes a sharp dip or "ditch" where the station's driveways meet the street. However, since the street also is a U. S. highway the city officials have not seen fit to let Classen improve the approaches. The result is a potential shaking up for the motorist who risks turning into the driveways at more than second gear speed.

As a general rule a station with those handicaps would not be doing enough business to merit consideration. But then most stations so handicapped do not have a Leonard Classen to direct the merchandising.

Classen was born in Newton. For years he worked at a bulk plant, and he knows everybody in Newton and within a 50-mile radius of that thriving railroad and agricultural city.

The Phillips Petroleum Co. put Classen in charge of the station the day it was opened, back in April of 1928. That day he and his helpers donned boots and raincoats and sold 8607 gallons of gasoline despite a steady rain the entire day.

The first year Classen sold 120,000 gallons of gasoline. He was not satisfied. He redoubled his personal solicitation work and stressed more strongly "service" to his customers.

"I do not do much telephone solicitation," Classen explained. "I know everybody, and when I go to the bank, or up town for anything I meet a dozen or more of my friends, and I always manage to get in a word or two about my business. Then I do a lot of calling on my friends out in the country. I keep up with what they are doing, and I let them know I'm interested in their everyday affairs.

"As for service, I stress that all the time. I never let a car come in here, no matter if the driver only wants a drink, that I do not clean off his windshield, his rear window, his headlights, and endeavor to check his tires."

Classen says he has regular customers from states as far south as Texas and as far north as Illinois. "Just the other day a doctor and his wife from Lubbock, Texas, stopped in here," he said. "They do a lot of driving and I see them about four or five times a year. They always stop; the doctor told me one day he always looked forward to getting to my station since that first time when we gave him such a full measure of service."

Does that pay dividends? Classen's gallonage for 1935 was 214,000, his lubricating oils sales were 3900 gallons and he sold 3600 pounds of grease during that year. Also he sold 214 tires.

He has three cardinal rules and he says he'll stick to them or get out of the business before he loses his shirt. Those rules are:

(1) Give no discounts.

(2) Hire good men, train them and keep them.

(3) Pay good wages and give commissions for "plus sales."

He believes that the station operator who is constantly hiring and firing helpers hurts his business. "The longer you keep a man," he explained, "the more accustomed your trade is to him, and the better he learns the whims of your trade. And to keep good men you have to pay them a decent wage."

There is little wonder, therefore, that 65 per cent of Classen's sales are to local trade.

The reader is looking out on the highway from the driveway of Leonard Classen's station, in Newton, Kans. His station is not on the corner and not entirely convenient of access by the motorist. He has a competitor next door and another diagonally across the street. But Classen "brings 'em in." The story tells how

Free Services Boost Dealer's Sales

Mr. C. A. Edmonson, who operates a service station in Danville, Ind., believes that it is the little free services that bring in business, and he goes beyond the service drive to prove it.

The *Pure Globe*, the Pure Oil Co.'s newspaper, it explains that Edmonson arranges for his employes to spend part of their off time washing the windshields and windows of cars parked along the streets in the general neighborhood of his service station. The employes are paid a reasonable amount for their services during their off time while doing this work.

After the job on a car has been completed, a courtesy card is hung on the door handle or some other conspicuous point. The following inscription appears on the card:

COURTESY CARD

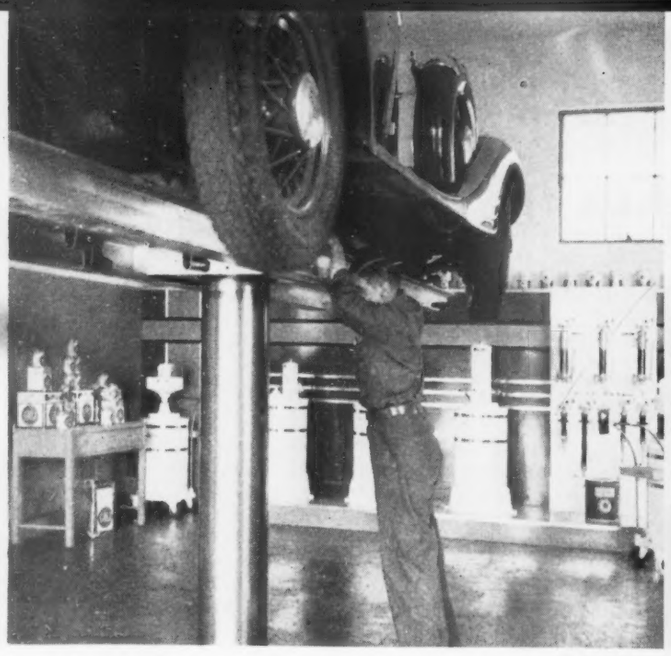
Thanks!

Without charge we have done the following:

Cleaned your windshield .....
Filled your radiator with water .....
Your gas tank is .....full
O. K. .....
Your oil needs changing .....
Needs replenishing .....
Your tires are .....

C. A. Edmonson Co.
Danville, Indiana

Edmonson reports a very worthwhile response from this indirect method of drumming up business, and considers it directly responsible for some very satisfying sales increases.



Here's what the customer, or Blanton, in the waiting room sees through the plate glass window—a completely and modernly equipped lubrication department kept spic and span, and neatly uniformed attendants

An attractively furnished waiting room-office is one feature of Blanton's Service Station in Tulsa. "Ernie" Blanton (right) is chatting with a customer waiting for his car to be lubricated. While the customer is waiting he can watch through the big plate glass window at Blanton's back virtually every operation in the lubrication department. It also helps Blanton to check up on the work

Downtown Station Goes After Greasing, Washing Business

IN JUNE, 250 automobiles were lubricated and 185 washed at Blanton's service station at Eighth St. and Boston Ave., three blocks from the heart of Tulsa's business district.

Business done at the station in June was 17 per cent greater than in May, while the May business was 25 per cent greater than that done in April. The station was opened early in April.

While many dealers have been scrambling for locations out in the residential districts and believe the trend is toward the "neighborhood" stations, Blanton came in from the near north side of Tulsa and built his attractive station right down town.

To build the station it was necessary to raze one of the oldest service stations in Tulsa—a station built of stone and at considerable expense back in the days when there was a Waite Phillips Oil Co. in the marketing branch of the industry.

Adjoining the old station was a battery and ignition service station. Additions to one of Tulsa's largest churches had all but cut it from view of motorists.

Blanton acquired the lease on the old station and on the battery station. The stone in the old station was removed—it belonged to the oil company that had the place leased at a high rental. Blanton salvaged the brick from the battery station and his new station accordingly did not cost him as much as one might think. His heaviest item, he said, was for the equipment he installed.

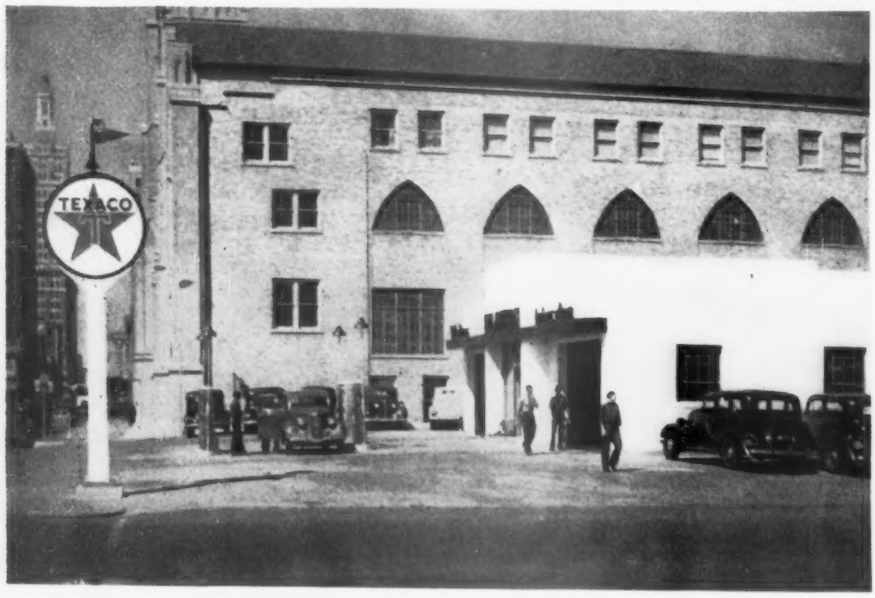
"Ernie" Blanton is a young and comparative newcomer in the service station business, but not in the oil business. When the Producers & Refiners Corp. was operating its West Tulsa refinery, Blanton at one time or the other held almost every job in the refinery yard. Then he was switched to the sales department. When the plant shut down Blanton looked around for a location, found one on the near north side of Tulsa, and built his first service station. That was two years ago. Now he's a distributor and a dealer.

Not all of Blanton's time was spent, however, in the refinery yard and the sales department when he was with the old P. & R. Corp. He was "on leave of absence" in the summer months—he was a catcher in the Three I league. Then he was with Cleveland in the American League for two years but finally quit organized baseball in 1932.

That baseball training, Blanton believes, has helped him in his business.

"The customers want to be pleased—they want to get a run for their money, and most of all," Blanton says, "they want something a little different. We try to give them just a little more service, a little more courtesy, and a more thorough job than any of our competitors. None of my men 'guess' at the lubrication of a car. It makes no difference how many of those cars they have lubricated, they still have to check themselves with the chart before they consider the job completed.

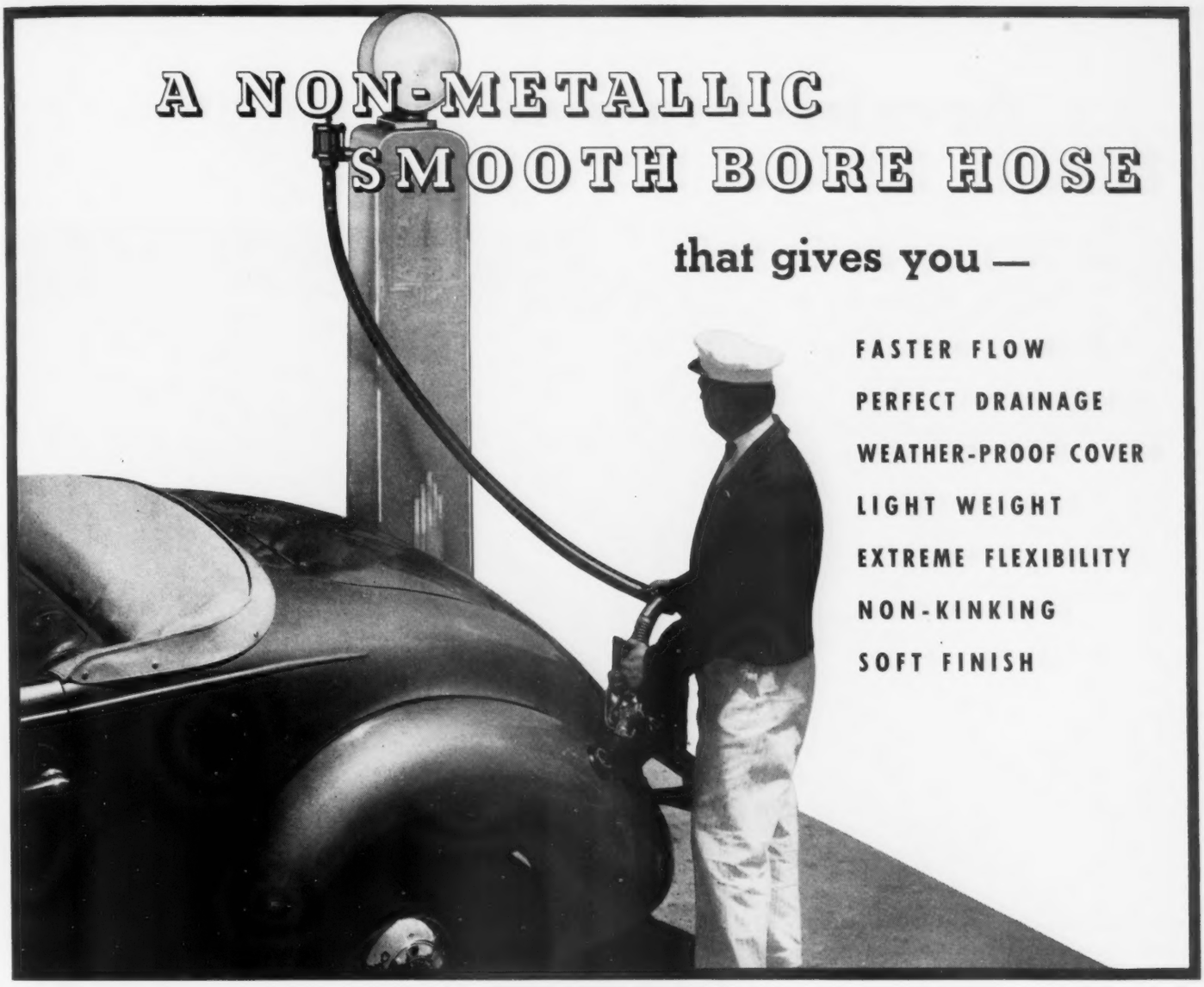
"There is another thing. We believe that, no matter where you are located, you are going to get no more business than you go after. We are strong believers in personal solicitation. We cannot afford to sit back and take what business comes our way. My men and myself are always soliciting somebody for business."



In appearance somewhat dwarfed through being located next to a large church in Tulsa, but attracting attention because of the bustle around it, is Blanton's new service station, in Tulsa. It is white, with glistening black enamel trim and lettering

A NON-METALLIC SMOOTH BORE HOSE

that gives you —



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Service Station "G" Men

By F. P. McLAUGHLIN*

(An abstract of an article published in the Orange Disc, a Gulf Oil Corp. publication.)

THE life of a service station salesman is comprised of more than filling your tank, checking your crankcase oil, replenishing your radiator water, and wiping your windshield. Often his existence is filled with excitement. Occasionally there are hair raising thrills. These, of course, are not every day occurrences, but Gulf service station employes have had their share, and in some cases even have been instrumental in aiding the government to track down dangerous criminals.

Several years ago counterfeit bills by the thousand were flooding the United States. During the brief period this currency was in circulation scarcely a week passed without one or more of these bills being presented at Gulf stations. However, less than a half dozen found their way into Gulf cash registers before a plan was devised that would enable the company to protect itself, and which eventually might lead to the capture and apprehension of the makers and dispensers of this spurious currency.

The method adopted by Gulf to trace the presenters of bogus bills has proven very effective despite its remarkable simplicity. From the general office a letter carefully describing the fake currency was sent to each division sales manager. From the division offices, copies of the bulletin were forwarded to each service station manager who was instructed to hang it where it would be a constant reminder to all employed on the premises.

The letter carefully described the discrepancies of the bills, named the person whose portrait appeared on the face, gave the serial numbers together with the name of the issuing bank, and pointed out the signatures and plate numbers. This information was given so that service station personnel might recognize more easily worthless money before it was accepted.

The attendants also were instructed to write the license number of the purchaser's car on the back of every bill whose denomination was ten dollars or more. It is known that "ones" and "fives" rarely are counterfeited because of the time element involved in getting a sizable number into circulation before government agents are able to stop the operations.

Periodically during the past three years letters describing different counterfeit notes have been distributed. During this period an occasional bogus bill was uncovered when the service station receipts were deposited in the bank. In every case, however, when the license numbers were checked and the purchaser's activities were investigated by secret service agents, it was discovered that the customer was an innocent person who had obtained the bill in the normal conduct of his business.

On every bill whose denomination was $10 or more, Gulf attendants wrote down the license number of the car whose occupant passed the bill. This practice led to the capture of more than one criminal

During the passing months hundreds of thousands of Gulf customers paid for their purchases and departed without realizing that their license numbers had been recorded on the currency they presented. Then, in Pittsburgh late last summer things began to happen. While checking the Gulf deposits for the preceding day an alert bank clerk uncovered a counterfeit ten dollar bill. Gulf was notified immediately and the bank delivered the spurious bill to the secret service office. Less than an hour later government agents arrived at the Pittsburgh division sales office in an effort to determine if the penciled numerals on the note had been placed there while the bill was in the service station manager's possession. If so, what did they mean and where had the bill been presented?

Imagine their amazement when they were informed that the marking was the license number of the customer's car! Their second question, "Where had the note been presented?", could not be answered. The bill was a part of a deposit made up from practically every station in the Pittsburgh area.

The license number of the car was a clue. Possibly the "manufactured" money had been presented by an innocent, law abiding citizen. Then again, it might have been passed by its maker—a dangerous criminal who, perhaps, was being sought in 48 states. A call to the local police headquarters disclosed that the automobile driven by the Gulf customer had been reported stolen in a nearby city a few days before the counterfeit bill was passed.

By teletype and radio a general alarm was broadcast to every town, city, and hamlet in the eastern part of the country. Government men, assisted by municipal and state police, kept a sharp lookout for the stolen car. Orders had been given to arrest the driver and any passengers, and to detain them until their histories

*Gulf Oil Corp.

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*Address*_____

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could be investigated thoroughly.

A few days passed during which no other spurious bills were uncovered. Seemingly, the presenter of the counterfeit note had eluded the net spread by the authorities. Then, the car was spotted in a suburb of Pittsburgh, and the driver and his companion arrested and taken to police headquarters for questioning.

The men readily admitted they had stolen the automobile but proclaimed their innocence when accused of passing counterfeit money. Crime files were checked; finger prints were taken and compared. Modern sleuthing gradually broke down their falsehoods with proof that could not be denied. The driver finally admitted he was the counterfeiter. The next day his companion confessed and also admitted that he was wanted in northern New York State to stand trial on a charge of murder.

Just which man in what Gulf service station was responsible for leading to the apprehension of these two law breakers never will be known. Gulf has never been able to determine at which location the bill was presented. Whoever he may be he is a hero, for through his cautiousness and obedience of orders he was able to assist the authorities in putting an end to the crimes of this combination of lawless, hardened, murderous, criminals.

Speaking of Service Station Hold-Ups . . .

By M. I. NEWBERY*

• • •

WHEN a service station manager or salesman feels a gun in his ribs and hears a harsh command to "stick 'em up", he realizes that it's a hold-up and whatever the outcome—whether he is quick and daring enough to try conclusions with the masked marauder, or whether he is compelled to part with the funds in his care—the story makes a thrilling item for the next edition of the dailies. Respectable citizens shake their heads over the depravity and thank God they are not as these desperadoes are.

Chats with various service station men, however, have proved that while the hold-up man with the gun is more spectacular, fortunately he is rare, whereas the respectable citizen is an expert at trying to beat the game, a constant menace against which they have to be always on the alert.

It is not always the shabbily dressed man in the third to tenth-hand car who tries to get ahead of the purveyor of oil and gasoline, the "hold-up man" more often appears to be in comfortable circumstances. For instance: a big smart car stops at the pumps. The driver is expensively togged, golf clubs in the back seat indicate his destination and his tank holds 20 gallons of gas. "Fill 'er up, Mac!" The salesman does so. "Check your oil, sir?" "Sure, and you might look at the rad and the tires." All done. "How much?" asks the motorist, plunging his hand into his pocket. It comes out empty or with a stray quarter or two. "Gosh, Mac, I've left my money at home. Let it go till next time, will you?" The salesman is forbidden to give unauthorized credit.

How can he tell if there will be a "next time"? So he demands security. If it is not forthcoming, he courteously but inexorably insists on draining out of the tanks the exact amount of gasoline and oil he put in. Usually the customer sees his error in judgment and mysteriously finds the necessary money in a forgotten pocket or leaves the required security.

Thus the service stations have acquired a neat collection of watches, rings, tie pins, cigarette cases, motor rugs, travellers' samples, jacks and other oddments. Even at that, "all is not gold that glitters", and many articles are not redeemable for the price of the sale, although as a rule they are called for in a day or two and the bill paid. It is easy to forget a small financial obligation and that is why cash sales are insisted upon with casual customers.

Very often this would-be defaulting customer is a girl in her dad's car and she wants to go farther and more joyously than her folks and her allowance permit. She relies on her charm to win credit and if smiles don't work, a pretty lady has been known to burst into sudden tears on the arm of an embarrassed salesman. Orders are orders and, unless he feels like financing the sale himself, he refuses credit and insists on security. One service station manager still holds a dainty ankle watch which the fair owner has never reclaimed.

Women, they say, are more unscrupulous than men, and more persistent. They try to engage a man in conversation and hold him enthralled until they turn away and he realizes he has forgotten to collect. A woman's favorite trick is to drive into the service station around five oclock and say she's late getting home to prepare her husband's supper and that she is right out of gas. If the salesman will only let her have a couple of gallons to get home on, he can call her husband at the office and establish her identity. She names a well-known concern but when the service station salesman calls the number, her husband proves to be quite unknown there!

One day a beautiful girl drove up to a service station in a big car, confessed that she had no cash and offered her cheque in payment. Something did not seem quite right about the cheque and the salesman took it in to the manager who telephoned and found it no good. The girl wept pitifully and the salesman, good hearted fellow, asked her how much gas would help her reach her friends. The sobbing girl thought ten gallons would help! She didn't get any.

When asked why the men are not more wary in their dealing with the fair sex the answer was, "Oh well, women are different!"

Then there is the customer who comes regularly for months and then on a busy day, being familiar with the place, helps himself to gasoline. When the salesman rushes up to look after him the customer asks for more gasoline and tries to get away with paying for only half. He doesn't like the implication of dishonesty and is very indignant when the attendant demands full payment.

Another problem is the so-called friend of the salesman, who comes along occasionally when the "boss" is away and gets a little credit, between friends. Finally he goes in to the manager on a day when his buddy, the salesman, is off duty. He hangs around for a while pretending surprise at the salesman's absence, talks about a number of things and then confesses that he owes a little bill that his friend let him run. He would like to pay it but hasn't any cash with him and doesn't like to offer a check as he is unknown to the service station manager. The manager, his suspicions lulled by this elaborate preamble and the frequent mention of the salesman's name, accepts the check. It turns out to be N.S.F. and, of course, the "friend" has faded right out of the picture.

ANOTHER "hold-up man" is the one who poses as a representative of a firm which is a credit customer. He doesn't as a rule get very far without being caught. Before specific instructions were issued to the service stations regarding checks for unknown parties it was quite a common thing for a man to buy oil and gasoline and one or two accessories and tender in payment a check made out to himself for $25 or $50 getting the change. The check often turned out to be no good and the man was never seen again. But there are on record an astonishing number of cases where a man becomes a steady customer until he gains the confidence of the salesmen at several service stations and then makes a grand clean-up, cashing a worthless check at each station and disappearing before they are cleared.

"After all," says the service station salesman, "when you are dealing with a good honest hold-up man you know what you're up against but you do have to keep your eye on the public. Most people are honest and you like to help out anyone who's in a real difficulty, but it's the flim-flammers and the small-timers who make it hard for us and our thousands of reliable customers."

*Imperial Oil Ltd., Toronto

A service station of the West India Oil Co., at San Juan, Puerto Rico. This company is a subsidiary of the Standard Oil Co. of New Jersey. The building in the background is a convent

U. S. Petroleum Products Aid In Modernizing Puerto Rico

By EVERETT B. WILSON*

• • •

PETROLEUM products purchased from continental U. S. are playing an important part in Americanizing Puerto Rico, particularly with respect to transportation. The Island has made great progress in adopting modern ways of life since it became a part of the U. S. in 1898 and, since it has no petroleum or coal deposits of any kind, it relies largely on petroleum products purchased in the States for its fuel.

Shipments to the Island last year were the largest in six years, from the standpoint of dollar value, while the quantity of gasoline sold there was the largest for any year, except 1934; asphalt shipments were the largest on record and kerosine purchases also reached a new high. The quantity of fuel oil shipped to Puerto Rico from the States was four times greater than in 1933, but smaller than in the 1920's, when fuel oil was used more generally by the sugar mills.

The Island's total purchases from the States of all petroleum products in 1936 amounted to $2,414,000, of which slightly more than half was gasoline. Some fuel oil also was shipped in from foreign countries, largely for use in refueling ocean vessels.

Puerto Rico has become highly motorized, having more automobiles and trucks per thousand people than any of the Caribbean countries and more miles of highway per hundred square miles of area than any of the other Caribbean areas. More than 18,000 motor vehicles were registered on the Island last year and purchases of new automobiles were greater than in any past year except one.

It is estimated that about two-thirds of the more than 2000 miles of improved highway are constructed with asphalt. These roads, which reach every section of the Island, are kept in good condition. Further highway construction is under way, the Insular government having provided that the full receipts from automobile licenses and from the gasoline tax shall be used for highway improvements and additions. The total gasoline tax is seven cents and the prevailing retail price in April was 22 cents.

Although several of the cities have concrete streets, there are no concrete highways on the Island. Asphalt is preferred on account of the mild year-around temperatures.

Gasoline can be obtained in any of the smallest communities and large service stations have been erected in San Juan, the capital, and other of the principal cities. For the most part, the sale of gasoline and lubricants is conducted by branches of companies operating in the States.

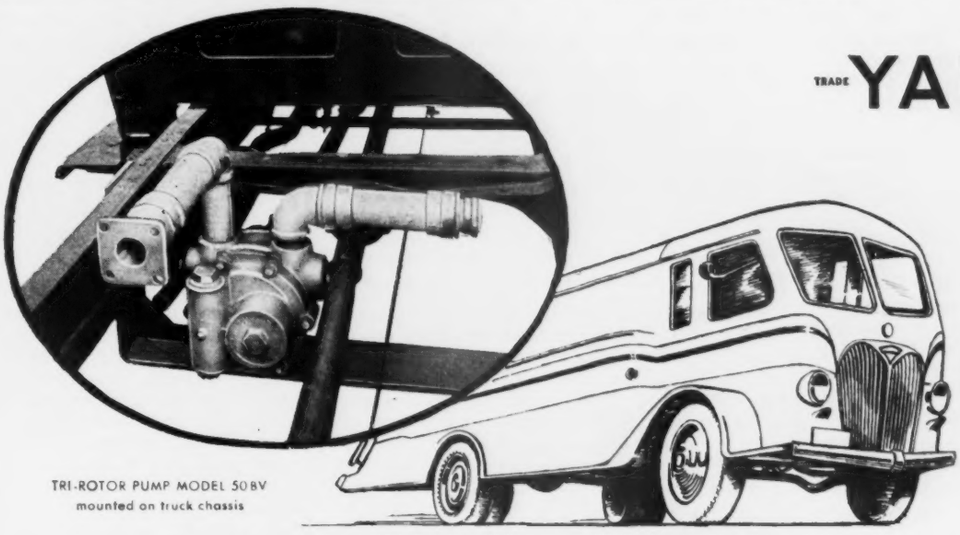
Trucks are widely used for commodity transportation, although the Island has a railroad, hauling passengers and freight, which now uses fuel oil instead of coal, and a number of the sugar centrals use fuel oil on their private railroad systems. Tractors with gasoline or Diesel engines are widely used in the sugar fields, both for plowing and for cultivation.

Buses and public cars are the principal means of conveying the public about the Island. The bus company which serves San Juan and suburbs operates a fleet of 196 vehicles and there are nearly 3600 public cars.

The use of coal has declined sharply in

*Puerto Rican Trade Council, Washington, D. C.

TRADE YALE MARK



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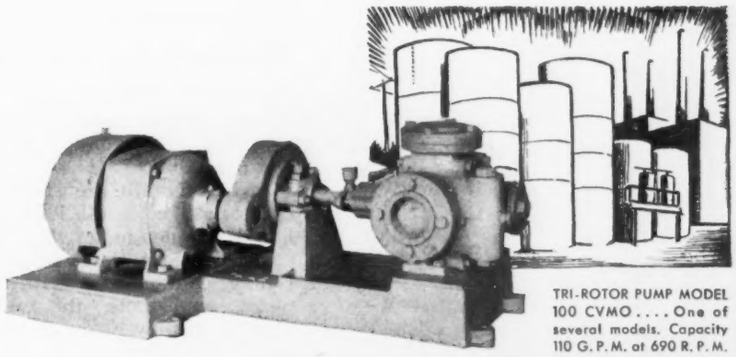

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recent years. In 1926, the Island purchased 108,000 tons from the States and in 1936 only 26,000 tons. The electric light plants serving two of the larger cities, Ponce and Mayaguez, now use fuel oil as a source of power, and the plants which supply illuminating gas to San Juan and Ponce also utilize fuel oil. Puerto Rico is mountainous in the interior and has an abundance of water power with which most of the electric light plants are operated.

The increasing purchases of kerosine, or illuminating oil, are not a sign of backwardness, but merely an indication that the buying power of the poorer working classes has improved sufficiently to enable them to use kerosine more freely. All but a few of the Island's 72 cities have electric lights, and those are available to all who can afford them. The average wage is relatively low, although it has improved greatly during the last few years, and lights of any sort are a luxury to many of the people.

Illuminating and cooking gas is available only in the larger cities, and cooking in homes is done either with electricity or, in the case of the poorer people, with kerosine or charcoal.

San Juan has ample facilities for refueling ships and a considerable amount of storage capacity for gasoline and fuel oil for other purposes. In addition, it is becoming an important aviation center, being located on the Pan American route to South America.

Few industries of any size have been developed on the Island, except the sugar industry. Formerly the larger sugar mills used fuel oil in considerable quantities, but now most of the mills burn the bagasse, or fiber, from the sugarcane immediately after the cane is ground, and need fuel oil only to start up their mills after a shut-down or in emergencies when the supply of bagasse is not adequate. Some mills, however, use fuel oil for one boiler and bagasse for the others. From eight to eleven gallons of oil are required per ton of cane when the oil is used exclusively.

The quantities of the principal petroleum products sold to the Island annually from the States during the last ten years are shown in the following table, together with the quantity of coal shipped there:

Shipments of Oil Products to Puerto Rico 1933-1936

	Gasoline and Other Motor Fuel Bbls.	Gas and Fuel Oil Bbls.	Petr. Asphalt Tons	Kerosine Bbls.	Coal and Coke Tons
1933	479,000	55,000	2,400	31,000	63,000
1934	493,000	156,000	2,600	23,000	65,000
1935	455,000	101,000	2,200	23,000	76,000
1936	487,000	224,000	7,300	26,000	96,000

General business conditions in Puerto Rico are quite favorable at the present time. Wages have been increased substantially in the sugar industry and the Island's payrolls are believed to be the highest in history. Shipments of gasoline during the first two months of this year were nearly one-third smaller than in the same period of 1935, as a result of heavy shipments during the latter part of 1936, but the outlook for the remainder of the year appears to be promising.

Meters Stop Over-Filling of Tank Truck Compartments

METERS on bulk plant truck loading lines have materially reduced stock losses, so reports Sam Trainer, Marathon County Oil Co., Wassau, Wis., through stopping the leak in overloading compartments.

Several years ago meters were installed on the lines and all trucks now are filled with a meter reading. The warehouseman, who fills trucks, sends a report on each truck filled with the meter readings to the front office so the company has a running account of all gasoline leaving the bulk plant.

Truck drivers have sales slips to turn in at the front office, and the accounting department checks the total sales on each delivery against the quantity taken out of the plant as indicated by the meter reading on the warehouseman's report. Each day the accounting department checks reports on truck fills against the sales slips turned in from each trip. If there is any difference, the accounting department checks with the driver and the warehouseman on the unreported quantity still being in the truck tank.

With meters on the loading lines, truck tank compartments are usually filled to the quantity to be delivered on an order. Some deliveries to resale and consumer accounts are still bucketed, but whenever possible—and this is in the majority of deliveries—a complete order is loaded to one or more compartments so the driver can make compartment dumps.

Accuracy in filling truck tank compartments is claimed by the company to be a major advantage in meters and the cause for lower stock losses. Prior to meters the compartments were loaded by stick and accurate loading to the gallon was not possible. Small variations in working the level up to the required gallonage, as indicated by the stick, were found to amount to a considerable loss in the long run. The meters have a pre-set device, so the warehouseman loads the compartment by setting the meter to the required volume to be delivered, starts the compartment loading, and when the order is filled the meter automatically shuts off the flow of gasoline. The gallon or so extra on a compartment fill has been eliminated.

Through meters the Marathon County Oil Co. plant has reduced losses to about 2 per cent. This figure may seem high but Wausau has a climate popularly described as being "nine months of winter and three months of poor sledding." Mr. Trainer reports that, in Wausau, there are only some 100 days during the year when the average daily temperature is 60 degrees or higher. Thus, the plant has to write off a considerable loss through volume changes caused by temperature on inshipments at the plant, making it all the more necessary to stop all losses on gasoline moving out of the plant.

Signboards Draw Motorist's Attention

Accessory merchandise at Westland Oil Co. service stations is brought to the attention of customers by these display boards. Household oil, the company's own brand with the same name as the company's motor oil, is displayed on one board fastened to a light pillar.

"Want More Gasoline Mileage" is the selling caption for a display of spark plugs, and note the salesman with another display board in hand talking to a prospective customer.

A pump island board, made from a sign standard, reminds customers of a number of accessory items.

Sun Goggles

Sun goggles are being sold this season at the stations of Buth Oil Co., Appleton, Wis. Customers kept inquiring about goggles for summer driving so this year the company decided to handle them.

NAPHTHAS · FUEL OILS · DIESEL FUELS

KEROSENE · GASOLINE · INDUSTRIAL

AUTOMOBILE LUBRICANTS

BRIGHT STOCKS

Nine strategically located **SHELL** *Refineries*

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COALINGA, DOMINGUEZ, MARTINEZ, WILMINGTON

GULF COAST

HOUSTON, TEXAS; NORCO, LA.

MID-CONTINENT

EAST CHICAGO, IND.; WOOD RIVER, ILL.; ARKANSAS CITY, KANSAS

Compare

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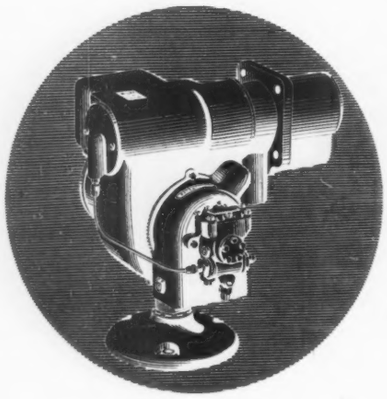

Compare the BETTENDORF DOUBLE-HEAT OIL BURNERS with their imitators and you'll readily understand why the Bettendorf has the endorsement of users everywhere.

It surely must mean something to you to know that the Bettendorf Burners have maintained undisputed leadership for years, that they are the most widely imitated Oil Burners on the market, that they have gone so far in advance of the trend that they cannot be duplicated—that they are fully protected by patents that cannot be violated.

You'll be surprised at the liberal Bettendorf offer to dealers. Write today for full information. Line up with Bettendorf and enjoy a profitable winter season.

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OIL BURNERS

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HAYS MFG. CO.
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HAYS

Winter Fuels

Berry's are prepared to furnish your requirements on modern fuel oils, range oils and furnace oils made with specifications to meet your particular needs.

We can ship promptly on short notice from conveniently situated refineries and terminals at prices we know will be competitive.

Your facilities, plus ours, gives you a setup equal to any.

We expect an increased demand for fuel oils this winter, due to the large additional installation of burners and would suggest you communicate with us at your earliest convenience.

JAMES B. BERRY SONS' CO., INC. OIL CITY, PA.

Branch Offices: New York City; Chicago, Ill.; Boston, Mass.; Philadelphia, Pa.; Houston, Texas; London, England; Hamburg, Germany; The Hague, Holland.

Refineries: Oil City, Pa.; Emlenton, Pa.; Farmer's Valley, Pa.; St. Mary's, W. Va.
Ocean Terminals: Baltimore, Md.; Tiverton, R. I.; Dorchester, Mass.; Carteret, N.J.; Edgewater, N. J.; Glastonbury, Conn.; Philadelphia, Pa.

Berry...
A NAME TO REMEMBER

New Patents

Compiled by R. E. Burnham, patent and trademark attorney, 511 Eleventh Street, N. W., Washington, D. C., from whom copies may be obtained at the rate of 25c each. State number of patent and name of inventor when ordering.

May 18, 1937

REFINING

Hydrocarbon oil treatment—Seynour W. Ferris, Aldan, Pa., assignor to Atlantic Refining Co. Filed Mar. 25, 1933. No. 2,080,415.

Removal of sulphur compounds from hydrocarbon oil and regeneration of spent treating clay—Wallace A. Craig, Los Angeles, Calif., assignor to receiver of Richfield Oil Co. Filed June 29, 1935. No. 2,080,654.

Treatment of hydrocarbon oils—Roland B. Day, Chicago, Ill., assignor to Universal Oil Products Co. Filed June 15, 1931. No. 2,080,701.

Treatment of hydrocarbon oils—Jacque C. Morrell, Chicago, Ill., assignor to Universal Oil Products Co. Filed July 23, 1934. No. 2,080,732.

Art of treating petroleum distillates with alkaline solutions and apparatus therefor—Donald B. Nutt, El Segundo, and John H. Easthagen, Los Angeles, Calif., assignor to Standard Oil Co. (Calif.). Filed Oct. 28, 1932. No. 2,080,737.

Art of cracking hydrocarbons—Edward W. Isom, Scarsdale, N. Y., assignor to Sinclair Refining Co. Filed Oct. 12, 1929. No. 2,080,820.

Process for breaking petroleum emulsions—Melvin De Groote, St. Louis, et al., assignors to Tretolite Co. Filed Dec. 31, 1934, and Sept. 18, 1936. Nos. 2,080,003, 2,080,004, and 2,080,005.

MISCELLANEOUS

Gasoline-dispensing-pump control device—Charles Devers, Pittsburgh, Pa. Filed Apr. 21, 1936. No. 2,080,535.

Oil-dispensing system, and liquid-storage device—Charles W. Ginter and John F. Carter, Bryan, Ohio, assignor to Aro Equipment Corp., same place. Filed Feb. 19 and July 23, 1934. Nos. 2,080,566 and 2,080,567.

Floating roof construction—John Hoenighausen, Jamaica, N. Y., assignor to Socony-Vacuum Oil Co. Filed Apr. 10, 1936. No. 2,080,568.

Motor fuel—Jesse R. Wilson, Chicago, Ill., and Vanderveer Voorhees, Hammond, Ind., assignors to Standard Oil Co. (Ind.). Filed July 28, 1933. No. 2,080,681.

Apparatus and method of pumping hydrocarbon liquids (unloading tank car)—William N. Glab, Dubuque, Iowa, assignor to Morrison Bros. Co., same place. Filed Mar. 2, 1936. No. 2,080,706.

Motor fuel products—Thomas H. Rogers and Vanderveer Voorhees, Hammond, Ind., assignors to Gasoline Antioxidant Co. Filed Mar. 22, 1930. No. 2,080,928.

Lubricating oil composition—Arnold C. Vobach, Whiting, Ind., assignor to Sinclair Refining Co. Filed July 6, 1936. No. 2,081,075.

The following to James R. Rose, Edgeworth, Pa., as inventor, and Michael L. Benedum and Joseph C. Trees, Pittsburgh, Pa., as assignees of three-fourths:

Process of treating hydrocarbon fluids—Filed Dec. 20, 1935. No. 2,080,929.

Apparatus for treatment of hydrocarbon fluids—Filed Dec. 20, 1935. No. 2,080,930.

Process of and apparatus for treatment of hydrocarbon fluids—Filed Dec. 20, 1935. No. 2,080,931.

Apparatus for treatment of hydrocarbon fluids—Filed Dec. 20, 1935. No. 2,080,932.

Process of treating aliphatic hydrocarbons—Filed Nov. 19, 1936. No. 2,080,933.

* * *

The following to Union Oil Co. of Calif., as assignee of the inventors:

Bituminous cement—Ulric B. Bray, Palos Verdes Estates, Calif. Filed Nov 27, 1933. No. 2,080,688.

Process for producing bituminous emulsion—Bray and Lawton B. Beckwith, Palos Verdes Estates. Filed Mar. 30, 1934. No. 2,080,689.

Filled asphalt and method for producing—Bray and Beckwith. Filed Apr. 30, 1934. No. 2,080,690.

Process for producing petroleum plastics—Donald E. Carr, Naples, Calif. Filed Nov. 20, 1933. No. 2,080,696.

Gasoline hose—Robert Berkowitz, Brooklyn, N. Y., assignor to Metal Hose & Tubing Co., same place. Filed Jan. 19, 1933. No. 2,079,598.

Manufacture of esters from olefines—Harold S. Davis and Alfred W. Francis, Woodbury, N. J., assignor to Socony-Vacuum Oil Co. Filed Mar. 9, 1934. No. 2,079,652.

Apparatus for voltolization—William J. Sweeney and Roger W. Richardson, Baton Rouge, La., and Eger V. Murphree, New York, N. Y., assignors to Standard Oil Development Co. Filed May 14, 1935. No. 2,079,750.

Lubricant—Peter J. Wiezevich, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed Aug. 16, 1933. No. 2,079,783.

Soluble oil—John B. Holtzclaw, Roselle, and Carl Winning, Elizabeth, N. J., assignors to Standard Oil Development Co. Filed Aug. 18, 1934. No. 2,079,803.

Mixed tertiary butyl ethers—Theodore Evans, Kensington Park, and Karl R. Edlund, Berkeley, Calif., assignors to Shell Development Co. Filed Feb. 9, 1935. No. 2,080,034.

Distillation process for purification of alcohols—Petrus J. Roelfsema, Martinez, Calif., assignor to Shell Development Co. Filed Oct. 25, 1935. No. 2,080,064.

Treatment of organic compounds—Charles D. Lowry, Jr., and Charles G. Dryer, Chicago, Ill., assignors to Universal Oil Products Co. Filed June 30, 1934. No. 2,080,142.

* * *

May 25, 1937

REFINING

Process of deasphalting and dewaxing petroleum oils—Carleton Ellis, Montclair, N. J., assignor to Standard Oil Development Co. Filed Nov. 11, 1931. No. 2,081,174.

Method of stabilizing motor fuel against gum formation—Robert E. Burk, Cleveland, Ohio, assignor to Standard Oil Co. (Ohio). Filed Dec. 23, 1933. No. 2,081,218.

Process for treating oils—Walter A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co. Filed Mar. 18, 1935. No. 2,081,309.

Conversion of hydrocarbon oils—Kenneth Swartwood, Chicago, Ill., assignor to Universal Oil Products Co. Filed May 29, 1933. No. 2,081,342.

Conversion of hydrocarbon oils—Charles H. Angell, Chicago, Ill., assignor to Universal Oil Products Co. Filed June 8, 1934. Nos. 2,081,347, and 2,081,348.

Method of improving gasoline—Vladimir Ipatieff, Chicago, Ill., assignor to Universal Oil Products Co. Filed July 5, 1932. No. 2,081,357.

Process of dewaxing liquid hydrocarbons—Hans O. Lindgren, Appelviken, Sweden, assignor to De Laval Separator Co. Filed Apr. 26, 1935. No. 2,081,403.

Distillation unit—John S. Wallis and John C. Mahoney, New York, N. Y., assignors to Alco Products, Inc. Filed Nov. 4, 1931. No. 2,081,440.

Art of cracking mineral oils—Chauncey B. Forward, Urbana, Ohio, assignor to Forward Process Co. Filed June 29, 1934. No. 2,081,534.

Automatic side stream control system (fractionating apparatus)—Charles M. Ridgway, Muskogee, Okla., assignor to Pure Oil Co. Filed May 31, 1935. No. 2,081,601.

Oil purifier—William C. McBain, Youngstown, Ohio, assignor to Cold Metal Process Co., same place. Filed Feb. 3, 1933. No. 2,081,632.

Solvent extraction processes—Willem J. D. van Dijck, The Hague, Netherlands, assignor to Shell Development Co. Filed May 5, 1933, Oct. 19, 1933, and June 19, 1935. Nos. 2,081,719, 2,081,720, and 2,081,721.

Method for increasing lubricating oil yields—Fred G. Fellows, Ponca City, Okla., assignor to Continental Oil Co. Filed Jan. 28, 1935. No. 2,081,855.

Recovery of solvents from oil—Edward N. Roberts, Casper, Wyo., assignor to Standard Oil Development Co. Filed Aug. 16, 1934. No. 2,081,884.

REFINING AND MISCELLANEOUS

The following to Union Oil Co. of California, as assignee of the inventors:

Dewaxing oil—Blaid G. Aldridge, Los Angeles, Calif. Filed July 25, 1933. No. 2,081,287.

Method and apparatus for continuous filtration—Earle W. Garde, Palos Verdes Estates, Calif. Filed Aug. 27, 1934. No. 2,081,296.

Method for dewaxing oil—Ross J. Garofalo, Los Angeles, and Claude E. Swift, Glendale, Calif. Filed Aug. 12, 1935. No. 2,081,297.

Process and apparatus for separating oil from wax cakes—Basil Hooper, San Pedro, Calif. Filed Apr. 2, 1934. No. 2,081,300.

Co-precipitation of asphalt and wax—Philip Subkow, Los Angeles, Calif. Filed May 16, 1932. No. 2,081,310.

Process for treating oils—Ulric B. Bray, Palos Verdes Estates, and Swift. Filed Aug. 4, 1931. No. 2,081,473.

Process for purifying naphthenic acids

Since practically every motorist in the United States knows that 100% pure Pennsylvania grade motor oils lead the field, why not job the world's finest? The Freedom Oil Works Company offers four fine packaged oils that meet the most exacting specifications, yet can be sold at a price. Exclusive marketing rights available in many territories on one or all four brands. Private brands also sealed in jobbers' cans. For information write The Freedom Oil Works Company, Freedom, Pa. Pacific Coast Bulk Plant: Los Angeles, Cal.

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Happy Motoring

ESSO STATION

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Supplies and services are available at the Esso signs identifying thousands of American and foreign filling stations, selling motor fuels and lubricants from the world's largest refineries and most extensive petroleum research and development laboratories.

ESSO, INC.
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The word ESSO is "A sign of service and a symbol of quality"

ESSO—for Premium Motor Fuel ESSO MOTOR OIL—for Premium Motor Oil
ESSOLENE—for Regular Motor Fuel ESSOLUBE—for Regular Motor Oil

—Donald E. Carr, Naples, Calif. Filed Oct. 29, 1935. No. 2,081,475.

Process for production of lubricating oil—David R. Merrill, Long Beach, Calif. Filed Oct. 24, 1932. No. 2,081,494.

Process for solvent extraction of lubricating oils—Merrill. Filed Dec. 5, 1933. No. 2,081,495.

Process for preparing petroleum plastics—Merrill. Filed Aug. 25, 1931. No. 2,081,496.

Extraction process—Merrill. Filed Jan. 11, 1935. No. 2,081,497.

Process for extraction of mineral oils with basic selective solvents—Merrill. Filed Jan. 19, 1935. No. 2,081,498.

Lowering pour point of oil—Maner R. Wade, Long Beach. Filed Sept. 4, 1934. No. 2,081,518.

Method of separating wax from oil—Wade. Filed Aug. 6, 1935. No. 2,081,519.

Process for solvent extraction of petroleum fractions—Charles D. Barnes, Long Beach. Filed Oct. 27, 1934. No. 2,081,524.

Method for producing lubricating oil—Bray. Filed Mar. 7, 1932. No. 2,081,731.

Process for dewaxing oil—Bray and Carr. Filed Nov. 6, 1933. No. 2,081,732.

Process for separating wax from asphalt-wax mixtures—Bray. Filed May 9, 1932. No. 2,081,733.

Method for treating oils—Bray. Filed Aug. 1, 1933. No. 2,081,734.

MISCELLANEOUS

Method of preventing scale depositions and removing such deposit from metal surfaces—Boris S. de Mering, Houston, Tex., assignor to Standard Oil Development Co. Filed May 2, 1932. No. 2,081,168.

Fuel oil—Amiot P. Hewlettl, Cranford, and Charles H. Cole, Roselle Park, N. J., assignors to Standard Oil Development Co. Filed Dec. 30, 1933. No. 2,081,176.

Dehydrating alcohols—Peter J. Wiezevich, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed Dec. 28, 1935 No. 2,081,189.

Process and apparatus for conducting chemical reactions—Samuel C. Carney, Berkeley, Calif., assignor to Shell Development Co. Filed Oct. 8, 1930. No. 2,081,322.

Pipe still—D. Ronald Johnson, Ponca City, Okla., assignor to Continental Oil Co. Filed Feb. 17, 1932. No. 2,081,628.

Oil Composition—Bertrand W. Story and Everett W. Fuller, Woodbury, N. J., assignors to Socony-Vacuum Oil Co. Filed June 10, 1931. No. 2,081,886.

* * *

June 1, 1937

REFINING

Heating process and apparatus (heating hydrocarbon fluids)—Anthony E. Hassler, Ridley Park, and Hugh W. Fields, Glen Mills, Pa., assignors to Atlantic Refining Co. Filed Feb. 9, 1934. No. 2,081,927.

Process of treating oil to cracking temperatures; process and apparatus for heating fluids, and method of heating fluids—John G. Alther, Chicago, Ill., assignor to Universal Oil Products Co. Filed Feb. 15, June 4, and June 4, 1932. Nos. 2,081,971, 2,081,972, and 2,081,973.

Methods of making high viscosity index lubricating oils—Elmslie W. Gardiner, John W. Greene, and Arthur L. Lyman, Berkeley, Calif., assignors to Standard

Oil Co. (Calif.) Filed June 11, 1934. Nos. 2,082,203 and 2,082,204.

Apparatus for countercurrent contact treatment of liquids—Reading B. Smith, Hammond, Ind., assignor to Sinclair Refining Co. Filed Dec. 10, 1935. No. 2,082,034.

Process of treating hydrocarbon oil—Harold R. Snow, Neodesha, Kans., assignor to Standard Oil Co. (Ind.) Filed May 3, 1933. No. 2,082,224.

Method of sweetening a hydrocarbon oil—Frank Gardner, Dallas, Tex. Filed Feb. 9, 1934. No. 2,082,331.

Heating apparatus for breaking down emulsions, and process for very rapid heating of fluids—Joseph W. Hays, Tulsa, Okla. Filed Mar. 20 and Apr. 13, 1933. Nos. 2,082,337 and 2,082,338.

Pyrolytic treatment of hydrocarbons, and method of treating hydrocarbon oil—Percival C. Keith, Jr., Port Washington, N. Y., assignor to Gasoline Products Co. Filed Feb. 1 and June 13, 1933. Nos. 2,082,636 and 2,082,637.

The following to Standard Oil Co. (Ind.) as assignee of the inventors:

Polymerization of gaseous olefins—Ward E. Kuentzel, Whiting, and Robert F. Ruthruff, Hammond, Ind. Filed Dec. 28, 1934. No. 2,082,454.

Catalytic polymerization — Kuentzel. Filed Dec. 17, 1934. No. 2,082,500.

Catalytic polymerization and polymerization catalysts—Ruthruff. Filed Aug. 10, 1934. No. 2,082,518.

Olefin polymerization—Ruthruff. Filed Sept. 8, 1934. No. 2,082,519.

Conversion of hydrocarbon gases to liquids—Ruthruff and Kuentzel. Filed Dec. 17, 1934. No. 2,082,520.

MISCELLANEOUS

Process for preparing tertiary alkyl phenols—Clayton M. Beamer, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed Feb. 16, 1932. No. 2,082,044.

Seal for floating tank roofs—John H. Wiggins, Tulsa, Okla. Filed Apr. 12, 1934. No. 2,082,194.

Register for gasoline—Richard S. Townsend, Wayland, Mass., and Elliot Farley, Mount Kisco, N. Y. Filed Mar. 27, 1935. No. 2,082,368.

Process of recovering tar acids from crude tar—Julius G. Hatman, Elkins Park, Pa., assignor to Sharples Specialty Co. Filed July 20, 1935. No. 2,082,626.

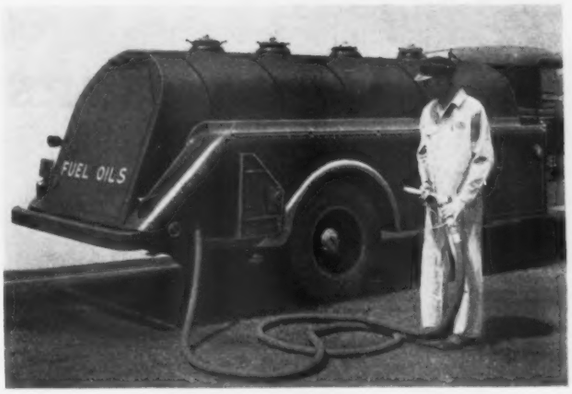
Sales Manager Retires

CHICAGO, July 26.—H. R. Cochran, Standard Oil Co. (Indiana) St. Louis sales division manager, will retire Aug. 1, President Edward G. Seubert announced here today.

Mr. Cochran's successor will be R. W. May, Decatur, Ill., manager. E. N. Shallenberger, Fargo manager, will succeed Mr. May at Decatur. A. H. Worrall, assistant manager at Fargo will be promoted to manager. H. E. Potter, assistant manager at Mankato will be assistant manager at Fargo and Milo A. Neighbor, wholesale sales promoter at Des Moines will be assistant manager at Mankato.

Mr. Cochran joined Standard, April 1, 1896 as station clerk at Atchison, Kans. He has been manager at Saginaw, Grand Rapids, and Detroit, and assistant general manger of the Eastern and Northern Divisions.

IT WILL PAY YOU *to give your drivers this lightweight fast delivery* HOSE!



GOODALL

"NEWTYPE CORD"
(U. S. PATENT 1948410)

SYNPLASTIC FUEL OIL HOSE

Records show a new low in fuel oil delivery costs for trucks equipped with GOODALL "Newtype Cord" Synplastic Hose. Drivers like it because it is easy to handle—light, flexible, kink-free. From the buyer's standpoint, it provides quicker deliveries, more stops per day and more gallons delivered per truck. The patented construction of interwoven wire and cord, with cover and tube forced into the weave, prevents the hose from flattening and permits a full flow, even when the hose is partially reeled. The special synplastic tube greatly increases the life of the hose by resisting the action of oil and preventing swelling. This non-swelling feature also insures a maximum flow indefinitely, and permits recoupling whenever necessary.

Put GOODALL "Newtype Cord" on one or two of your trucks, then compare delivery costs with the balance of your fleet!

Available in sizes from 1" to 2" I.D., and lengths up to 150 feet.

GOODALL RUBBER COMPANY

NEW YORK–PHILADELPHIA–PITTSBURGH–CHICAGO–CLEVELAND–HOUSTON

GOODALL MECHANICAL CORP.
SAN FRANCISCO – LOS ANGELES – SEATTLE
FACTORY: TRENTON, N. J.

ARE YOU ONE OF THE

1,000 Oil Men
Who Get Lower Rates

From NATIONAL PETROLEUM MUTUAL
FIRE INSURANCE COMPANY

225 So. 15th St. Philadelphia, Pa.

New Equipment

AND THE MANUFACTURERS

Tire Balance

Wheel-balancing machines will be in use in every service station and garage before long is the prediction of tire and motor car experts, according to a statement issued by The B. F. Goodrich Co., Akron, Ohio. When wheel balancing becomes universal, steering ills will become less common, and accidents traceable to them will be reduced, it is said. With machines now in use in service stations, balance can be brought to within close limits by clamping small weights, usually two or three per wheel, on the rim.

Well-balanced tires became a necessity with increased driving speeds and more sensitive steering mechanisms, it is indicated. Tires are marked for valve position in most instances and motor car makers specify certain types of markings. Balance is affected however by wheel and tube as well as the tire. Wheels are usually well balanced on new cars but may be put out of balance by repairs or replacement by the motor car owner.

* * *

New 'Caterpillar' Booklet

"Caterpillar Products On the Job In The Petroleum Industry" is the title of a new illustrated booklet by the Caterpillar Tractor Co., Peoria, Ill. The various uses of this type of tractor are described. "Caterpillar" Diesel engines are shown drilling and pumping.

* * *

Meter Representative

Pittsburgh Equitable Meter Co., Pittsburgh, and its subsidiary Merco Nordstrom Valve Co., announce the appointment of C. M. W. Rand, Jr., to their sales staff. He will sell Pittsburgh water meters, gasoline and oil meters and Nordstrom lubricated plug valves in Alabama, Mississippi, east Louisiana and west Florida. Mr. Rand will work out of the Memphis office.

* * *

Welding Handbook

Complete handbook information on design and layout of piping for welded connections is contained in "Design of Welded Piping", a 200-page (6x9) booklet containing over 100 figures and tables, published by The Linde Air Products Co., New York.

Among the subjects treated are fundamentals of welded joint design, welding metallurgy, standard welded pipe connections, and design data on welding cast iron, galvanized iron, stainless steel and non-ferrous piping.

* * *

Wheel Bearing Lubrication

Kent's Pressure-Pak, a device for packing front wheel bearings, is being manufactured and sold exclusively by The Lubrication Corp., Chicago, it is announced. This much-neglected service is rendered in a quick and thorough manner with the Pressure-Pak, either employing air from the end of the tire hose or with a grease gun through an Alemite fitting. Incoming grease is said to force out all accumulated dirt and grease.

* * *

Soil-Proof Buildings

A transparent, repellent waterproofing known as Super-Por-Seal has been developed by the Truscon Laboratories, Detroit. Applied to concrete and masonry following cleaning, to close the pores of the stone, brick or concrete, treated surfaces are said to remain clean longer, as well as to resist water and be preserved. The material is not a wax solution. It may be applied with brush or spray and may be painted over later if desired.

Lifts

The Holister-Whitney Co., Quincy, Ill., has appointed Walter F. Vogel as southwest factory representative for its line of safety lifts. Vogel formerly built and sold gasoline pumps at San Antonio and, for the past two years, has covered the southwest territory with service station and bulk plant equipment.

* * *

Hose Catalog

Electric Hose & Rubber Co., Wilmington, Del., have just produced a new 64-page catalog of its complete line of braided and molded hose. The booklet is a loose-leaf form in pocket size.

Football Broadcasts

PHILADELPHIA, July 24.—Broadcasting time has been purchased from radio stations in 50 cities, covering 15 states, by the Atlantic Refining Co., for the broadcasting of intercollegiate football games this fall, according to Joseph R. Rollins, Atlantic's advertising manager.

Each of the stations will broadcast from eight to 11 games during the season, it was reported.

Lazy Bench . . .

Exactitude

A man was being tried for misappropriating a pig, and a conscientious witness, in whom the accused was said to have confided, was being examined.

"Can you repeat the exact words in which the prisoner confessed to taking the pig?" asked counsel.

"He said, sir, he took the pig."

The judge tried to simplify the question: "Did the prisoner say, 'He took the pig' or 'I took the pig'?"

"Oh, your Honor, he said he took it. Your Honor's name wasn't even mentioned."

The Naft Magazine
Anglo-Iranian Oil Co., Ltd.

—NPN—

"Aren't you the little girl who used to shrink from my embraces?"

"I don't recoil at the moment."

—Viking Vacuum
Viking Pump Co.

—NPN—

Socialist father: "What do you mean by playing truant? What makes you stay away from school?"

Son: "Class hatred, father; class hatred."

—Viking Vacuum
Viking Pump Co.

—NPN—

The defense attorney was cross-examining the witness, a beautiful blonde with lovely big eyes. The lawyer leaned forward.

"Where were you," he thundered, "on Monday night?"

The blonde smiled sweetly:

"Automobile riding."

"And where were you," bellowed the lawyer, "on Tuesday night?"

"Automobile riding," repeated the beautiful blonde.

"And what," he murmured, "are you doing tomorrow night?"

The prosecuting attorney leaped from his chair.

"Your Honor," he protested, "I object to that question."

"And why do you object?" inquired the judge.

The prosecutor drew himself up in righteous indignation.

"Because," he snapped, "I asked her first!"

Marquette Lubricator
Marquette Petroleum Products, Inc.

—NPN—

"Mother, am I a canoe?" asked little Harry.

"Certainly not, Harry. What put that idea in your head?"

"Well, you are always saying you like to see folks paddle their own canoes and I thought I must be ours."

—NPN—

Thoughtful Friend: "My good man, why don't you take the street car home?"

Illuminated one: "Sh no ushe. My wife wouldn't let me keep it in the houshe."

—Marquette Lubricator
Marquette Petroleum Products, Inc.

—NPN—

"Why I'm ashamed of you, my boy," the father complained to his loafing son. "When George Washington was your age, he had become a surveyor, and was hard at work."

"And when he was your age," the boy said softly, "he was President of the United States."

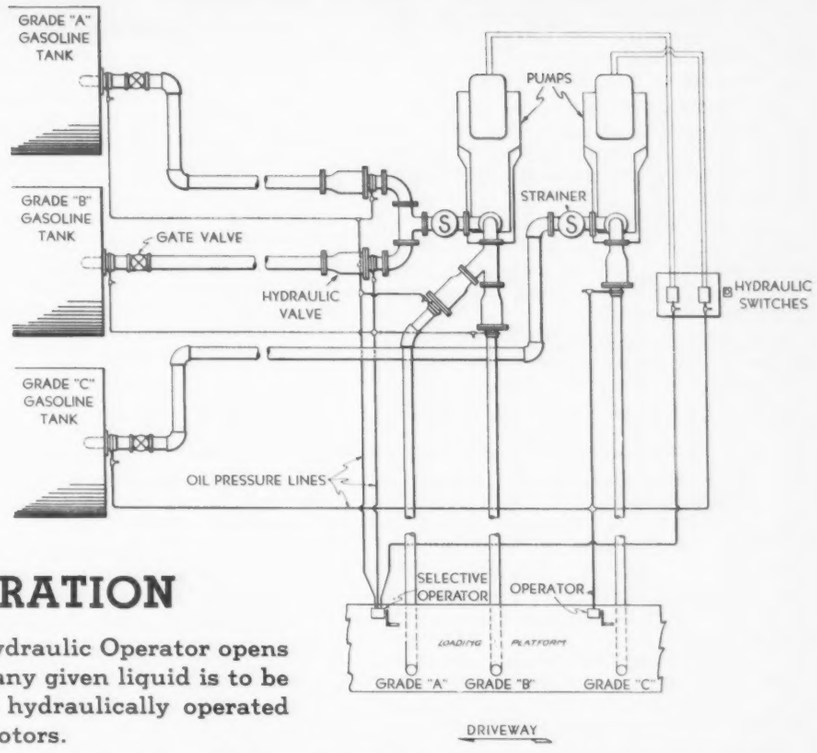
—The Oklahoma Oil Marketer
Oklahoma Oil Marketers

And Now .... S&J Hydraulic Valves for Bulk Storage Plants

HERE is a new adaptation of the S. & J. Internal Hydraulic Valves which have been used for years in the truck tanks of nearly all of the leading petroleum marketers.

Their efficiency, positive action and fire safety prompted the Chief Engineer of a major oil company Marketing Division, to utilize these valves in the design of their new bulk station plants.

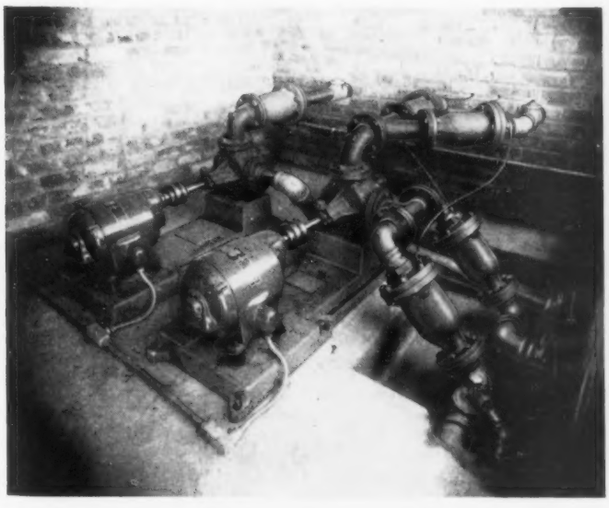
This system, illustrated by the drawing at the right, is extremely flexible in that automatic manifolding is so easily and positively accomplished, it is efficient because it obviates so many manual operations resulting in error, it precludes mixing of liquids and it is fire safe.



DETAILS OF OPERATION

One stroke of the handle of the S. & J. Hydraulic Operator opens all valves in the pipe line through which any given liquid is to be transferred and simultaneously closes a hydraulically operated electric switch which starts the pump motors.

Fire safety is assured by fuse plugs in the hydraulic lines which melt at 165°, releasing hydraulic pressure which closes all valves and opens electric switch, stopping the pump motors. Internal Safety Valve located inside of tank opens only when pumping out and closes automatically in case of fire.



Theft of liquid is prevented by the use of but one padlock on the handle of the hydraulic operator. Closing all valves entails only the release of the handle of the operator and locking up the entire system takes but a moment.

All valves are held closed by spring tension in their normal position so any expansion of the liquid in the pipe line is relieved by this spring loading. All operators and discharge lines are so plainly marked that there is no excuse for error in loading.

For a detailed description of this system, see page 97 of the June 30 issue of National Petroleum News. Write us direct for further information and prices.

SHAND & JURS CO.
BERKELEY, CALIFORNIA

295 Madison Ave. New York | 601 Fannin St. Houston | 225 W. 11th St. Los Angeles

SHAND & JURS

Legislative Trend in Middle West Against "Gas" Tax Diversion

CHICAGO, July 26.—Gasoline tax increases voted in two states.

No further gasoline tax diversion.

Gasoline price posting law enacted in one state, vetoed in another.

One new inspection law.

Such are the highlights of the 1937 legislative season, just completed, on bills and laws affecting the petroleum industry in the central division of the American Petroleum Industries Committee.

The following ten states are included in the APIC central division: Arkansas, Indiana, Illinois, Kansas, Michigan, Minnesota, Missouri, N. Dakota, S. Dakota, Wisconsin.

Gasoline tax increases were voted in Minnesota and Missouri, but one of these states, Missouri, may be withdrawn from this classification if present referendum efforts are successful.

Over 10 years ago an amendment was tacked on Missouri's constitution limiting the amount of the state gasoline tax to 2 cents. This amendment expires in November, 1938. So the Missouri legislature this winter dipped well into the future, since the legislature will not meet in regular session for two years, and the rate was raised to 3 cents beginning with expiration of the constitutional amendment.

To forestall the increase an attempt is now underway in Missouri leading to a popular vote. In this state if petitions are filed within 90 days after passage of a law, that law is automatically suspended and comes up for a popular vote at the next general election.

Petitions Circulated

Some 60,000 signatures are required for petitions now being circulated to be filed with the secretary of state. If the movement is successfuul the gasoline tax increase will be voted on in November, 1938.

Minnesota's tax rate was increased 1 cent, to a total of 4 cents, but for two years only. Reports indicate reaction to this bit of legislation has set in already and that legislators heard about it when they returned to the folks at home. That the tax was raised may be an issue for some legislators to overcome at the next election.

Efforts to reduce Nebraska's tax, part of which goes to old age assistance funds, were not successful.

Diversions of gasoline tax funds were not increased, and some gain was made through one state enacting a law reversing diversions. Michigans new law will transfer $5,000,000 from the general fund to the highway department. In Indiana a $2,000,000 diversion from the vehicle license fund to the general fund was stopped. Also, Indiana's legislature passed a resolution to prohibit diversion, and at the next election voters will have an opportunity to vote on this resolution.

For the past two years 2 cents of South Dakota's tax has been diverted for rural credits. This diversion has been stopped. One cent came off April 1 and the other cent will stop next Jan. 1.

A novel form of diversion was before Iowa's legislature. The proposal was to tax beer 4 cents a gallon for a fund to build secondary highways. Iowa's house passed the bill, but it failed in the senate.

Against Diversion

Legislatures in two other states took action on diversions. North Dakota passed a law prohibiting diversion and Illinois passed a concurrent resolution against diversion as an expression of legislative policy.

Chain store tax laws were an issue in some states. When legislatures adjourned two years ago four states—Indiana, Iowa, Wisconsin and South Dakota—had chain store laws affecting the oil industry. Now only two states — Indiana and Iowa — have such laws.

All chain store bills which included service stations were fought successfully. The South Dakota chain store bill did not affect the industry. An attempt to exempt service stations in the Iowa law failed passage by one vote, and a drastic new chain bill was defeated.

Numerous laws were enacted on truck legislation, mainly on new safety requirements such as flares, safety lights and so on. The major truck law directly affecting the industry was the new tax in Indiana. This law bases a license on the size of tires. A reciprocity law was enacted in Michigan which aids delivery trucks operating along the borders.

The industry's new inspection law is in Indiana, and under this law refineries in the middle west now have Indiana inspectors on duty to inspect shipments consigned to the state.

Fair Trade Law

Nebraska has a new fair trade law. Under this law sales below cost are prohibited. Retail cost is defined as cost of the goods to the retailer plus a 6 per cent mark-up unless the retailer can prove his cost less than this figure.

A law requiring wholesalers and retailers to post prices and any and all exceptions, on gasoline and fuel oil, was enacted in Iowa. A law requiring posting gasoline prices, and allowing no discounts off the price so posted, passed Illinois' legislature, but was vetoed by the governor.

Two notable bills were successfully opposed. These were a bill to tax gross production in Kansas 4-cents a barrel, and a bill for inspectors in refineries in Indiana. The Indiana bill would in effect have made inspectors dictators of the refineries.

Legislatures in all states of the APIC central division, from Indiana west through Kansas and Nebraska, were in session last winter and regular sessions are over until 1939. Already, however, special sessions have been held in North Dakota and Minnesota.

Special sessions may be held in Wisconsin and again in North Dakota. Michigan's legislature has been called into special session, for Aug. 2, on revenue bills. And there is talk of special sessions in Illinois and Indiana.

Road Oil Sales Raised By Light Highways

WASHINGTON, July 26. — Increased construction of the lighter types of highways resulted in an increase of 21 per cent in the sales of road oil by U. S. refineries in 1936 over 1935, according to Bureau of Mines statistics.

Sales in 1936 totaled 8,256,694 barrels, compared with 6,798,932 barrels in 1935.

An even larger proportionate increase, 30 per cent, was registered in the total sales of liquid and semi-liquid asphalts for highway construction if the road oil sales are taken in connection with the sales of cut-back asphalts, paving flux and emulsified asphalts — from 12,316,545 barrels in 1935 to 16,052,833 barrels in 1936.

The principal increases in road oil sales took place in California, Northern Louisiana and Arkansas, Texas Gulf Coast, and in the Oklahoma-Kansas-Missouri refining district.

Only 616,079 barrels of the road oil sold in 1936 were made from foreign petroleum imported from Venezuela and Mexico.

Oil Trucking Up 42% During June

WASHINGTON, July 26. — Movement of petroleum and its products by truck increased 41.98 per cent in June over June a year ago, according to truck loadings reported monthly to American Trucking Associations, Inc.

This increase is almost three times as great as the percentage of increase shown for truck loadings of all commodities over the same period, 15.81 per cent.

The petroleum loadings in June also showed an increase of 5.15 per cent over May loadings, while loadings of all commodities in June were 3.2 per cent below May, according to ATA.

In releasing its report, ATA says it "does not purport to indicate the amount of freight transported by motor carriers for the entire industry. It is designed chiefly to show the trend in the movement of commodities by truck. For that reason, comparisons are made in percentages."

Jobber Stages Picnic

DETROIT, July 26. — The Genesee Diamond Oil Co., with headquarters at Flint, Mich., and bulk and service stations throughout the central portion of Michigan, entertained its dealers and employes at a picnic in Ionia, July 18. More than 200 attended. Dinner was served by the company. E. B. Saxe is general manager of the company.

$25 Opportunity for Contest Lovers

CLEVELAND, July 26. — A new, but so far nameless, magazine for employes and commissioned bulk agents of the Phillips Petroleum Co. and its affiliates, has been launched by that company.

The July issue, the first, starts off in tune with the times by announcing a contest. The contest seeks an appropriate name for the magazine, and as inducement, offers $25 for the winner. The cover picture, carrying out the idea of the contest, is of an employe father, searching in a name book for a name for the new baby lying in its crib beside him.

The new house organ will be devoted generally to news of company and employe activities and to topics of timely interest. The first issue, a lively one, had, in addition, sports news in which employes featured, hobby and talent descriptions of employes' children, and several pages of personal news, all illustrated with many pictures and cartoons.

Tanker Construction Up

NEW YORK, July 23. — Construction of oil tankers throughout the world continued on the upgrade during the second quarter of 1937, according to Lloyd's Register of Shipping. Total construction was reported at 735,612 gross tons at the end of June, 1937, an increase of 45,774 gross tons over construction at the end of March, 1937.

The U. S. had under construction June 30, 13 steamers totaling 100,425 gross tons and 5 motorships totaling 27,830 gross tons. It ranked third in tanker construction throughout the world, being headed by Germany with 158,090 gross tons and Great Britain-Ireland with 140,765 gross tons under construction.

Construction of marine engines also increased during the second quarter of 1937, Lloyd's reports. A total of 948 engines of 3,039,079 horse-power were under construction, compared to 878 engines of 2,589,010 horse-power, at the end of March, 1937.

Moser Leaves Company

MILWAUKEE, July 26. — Milwaukee Badger Oil Co. has announced withdrawal of A. J. Moser as a partner, his interest being taken over by Ben Jaworski, president, and E. R. Wallmann, vice-president.

Tire Convention

NEW YORK, July 23. — The National Assn. of Independent Tire Dealers, Inc. will hold its annual convention Oct. 18 to 20 at the Hotel Stevens, Chicago, according to an announcement by George J. Burger. Dealer group meetings for handlers of various lines of tires will be held Oct. 18. The remainder of the program is to be announced later.

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NEWS BUREAUS AT WASHINGTON, NEW YORK, CHICAGO AND TULSA

Markets

At A Glance . . .

Mid-Continent: Bright stocks down 1 cent; gasoline steady.

Mid-Western: Refiner buys 200 cars of gasoline.

Eastern Seaboard: New York and Philadelphia gasoline higher.

Pennsylvania: Light products steady; lubes quiet.

Gulf Coast: Domestic and export trading light.

California: Gasoline shows further improvement.

Wax: Prices steady despite quiet trading.

Mid-Continent

Gasoline Steady

N. P. N. News Bureau

TULSA, July 26.—Scarcity of gasoline at "bargain" prices, more active broker inquiry, inter-refinery buying, and talk of higher prices all attested the steadiness of Mid-Continent gasoline prices last week. Virtually every Kansas refiner reported being behind on gasoline shipments. Numerous Oklahoma, Texas and Louisiana-Arkansas refiners were in the same position. Shortage of supplies at two or three plants resulted in inter-refinery trading. Most of this buying covered third-grade gasoline.

Buying of kerosine also was more active, according to reports. Buyers reported several "soft" spots had been cleaned up. Approximately 100 cars of East Texas kerosine were bought last week by an independent concern for shipment to the Gulf Coast.

One-cent reduction in Mid-Continent bright stock prices the third week of July resulted in a letup in buying. Refiners were of the opinion this was a normal reaction and that buyers would re-enter the market as soon as prices were steadier.

Refiners have begun to inquire for natural gasoline for fall blending operations. Supplies of, and demand for, this product were balanced.

Eastern

Gasoline Tight

N. P. N. News Bureau

NEW YORK, July 26.—Wholesale gasoline markets were tight along the eastern seaboard the past week and prices were higher at New York harbor and in the Philadelphia district. The price levels reached at these two points, however, were the same as prevailed at most other seaboard terminals in the previous week.

Tank car prices for 65 octane and above gasoline at New York harbor were at 7.75 to 8 cents for open spot market movement most of the week. Some suppliers offered this grade at 7.5 cents early in the week but then advanced their prices. Barge quotations were at 7.5 to 7.75 cents, f.o.b. the harbor.

The 7.5-cent price remained a representative part of the Philadelphia market for 65 octane and above gasoline for open spot tank car movement until late in the week. Some suppliers had been quoting 7.5, some 7.75, and some 8 cents through the week, but by July 23 practically all were at 7.75 cents. Those at the lower level had mostly moved up and not enough were at 8 cents to be representative of the market. However, one supplier reported a few open market sales at 8 cents. Shipments were mostly against contracts rather than in the open market, most suppliers stated.

Unsettled retail gasoline markets in Brooklyn and Philadelphia were reported more nearly normal as the week ended.

California

Gasoline Steadier

N. P. N. News Bureau

LOS ANGELES, July 24.—Local suppliers of gasoline continued to be impressed by strength shown in the spot tank car and tank truck and trailer market. Independent refiners were maintaining a price of 8 cents, or better, at the rack for third grade motor fuels. This is exclusive of all tax. Some deliveries to large-storage service stations in the Los Angeles area were made at 8.25 cents, which meant a net back to the refinery of about 8 cents.

Flush crude production in the Wilmington field was held responsible for some easiness in road oil prices. Several small plants had accumulations of residuum and were reported to have cut the price 10 cents a barrel, with current offerings in the neighborhood of 75 cents.

Burning oils remained unchanged. Quantities of fuel oil from Wilmington crude were reported available at $0.55 to $0.65 a barrel. In the San Joaquin Valley, prices at independent plants for this product ranged from $0.60 to $0.70.

Gas oil demand was active although prices were reported at slightly lower levels than a week ago. Independent suppliers indicated some spot lots of a good color product were available at $1.20 to $1.26.

A 38-40, w.w. kerosine was offered by independent plants at 4 to 4.25 cents, with the range extending up to 6 cents a gallon on higher quality products at major plants.

Some inquiry but no spot sales were reported in the offshore markets. U. S. Motor gasoline, less than 65 octane, was thought available at 5.75 cents, although the last sale was 5.875. Products of 65 octane or higher were said to be worth 6 cents.

N. P. N. Gasoline Index

	Dealer T.w. Cents per	Tank Car gal.
July 26	10.68	6.77
Month ago	10.52	6.74
Year ago	10.33	6.45

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 13 wholesale markets for regular-grade gasoline.

Wax

Scale Quiet

NEW YORK, July 26.—A dull market prevailed for crude scale wax the past week, traders reported. However, most of them said the market appeared firm and with only occasional offerings. One supplier said that little scale wax was being offered but that it was hard to find a buyer when a manufacturer needed quick shipping instructions. This lack of buying interest, however, had failed to ease the market due to the excellent stock position of most manufacturers.

The tightness in the fully refined waxes also contributed steadiness to scale, traders said. Some normal sellers of scale have been turning it all into fully refined and buying scale, it was reported.

Pennsylvania

Light Products Steady

N. P. N. News Bureau

CLEVELAND, July 26. — Continued steadiness of all light products stood out rather prominently in the western Pennsylvania refinery market the third week of July. Lubricating oils remained quiet and prices were easy.

Gasoline remained exceptionally scarce throughout the upper and lower districts. Toward the end of the week some refiners in the north field were asking higher prices for the high octane grades. The same was true of kerosine and fuel oil in the north field. The latter two items were especially scarce in and around Bradford.

Supply of, and demand for, kerosine and fuel oil were in fairly good balance in the lower field but many refiners were

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Gasoline *and* Naphtha

Prices Effective	July 26	July 19
OKLAHOMA		
U. S. Motor:		
62 oct. & below	5.00 – 5.25	5.00 – 5.25
63-67 oct.	5.375– 5.75	5.375– 5.75
68-70 oct. (regular)	6.00 – 6.125	6.00 – 6.125
60-62, 400 e.p.	5.00 – 5.25	5.00 – 5.25
64-66, 375 e.p.	*5.125– 5.375	*5.125– 5.375
68-70, 350-360 e.p.	*5.25 – 5.375	*5.25 – 5.375
WESTERN PENNA.		
Bradford-Warren:		
52-54 naphtha	*6.00 –6.125	*5.875– 6.00
Motor gasoline:		
U. S. Motor (58-62°)	6.00 – 6.25	6.00 – 6.125
Min. 60 oct.	*7.50 – 7.75	*7.375– 7.50
Min. 65 oct.	*7.75 – 8.00	*7.50 – 7.75
64-66, 390 e.p.	6.125– 6.25	6.125– 6.25
68-70, 350-360 e.p.	6.25 – 6.375	6.25 – 6.375
Other districts:		
52-54 naphtha	*5.875– 6.00	*5.75 – 5.875
54-56 naphtha	*6.00 –6.125	*5.875– 6.00
Motor gasoline:		
U. S. Motor (58-62°)	6.00 – 6.125	6.00 – 6.125
Min. 60 oct.	7.375– 7.75	7.375– 7.75
Min. 65 oct.	7.50 – 8.00	7.50 – 8.00
64-66, 390 e.p.	6.00 – 6.125	6.00 – 6.125
68-70, 350-360 e.p.	6.25 – 6.375	6.25 – 6.375
CALIFORNIA (3c tax to be added to prices if used in state)		
U. S. Motor:		
54-58, for instate shipment	8.00 – 9.25	8.00 – 9.25
54-58, for outside state shipment	8.25 – 9.00	8.25 – 9.00
58-61, 375-400 e.p., 65 oct. & above	8.50 – 9.75	8.50 – 9.75
†N. TEX. (For shipment to Texas and N. Mex. destinations; Group 3 prices quoted on northern shipments).		
U. S. Motor:		
62 oct. & below	5.125– 5.25	5.125– 5.25
63-67 oct.	5.50 – 5.625	5.50 – 5.625
68-70 oct. (regular)	6.00 – 6.25	6.00 – 6.25
60-62, 400 e.p.	*5.125– 5.375	*5.125– 5.375
KANSAS (For Kansas destinations only)		
U. S. Motor:		
62 oct. & below	5.375– 5.625	5.375– 5.625
68-70 oct. (regular)	6.375– 6.625	6.375– 6.625
†W. TEX. & N. MEX.		
U. S. Motor:		
62 oct. & below	5.125	5.125
63-67 oct.	5.50	5.50
68-70 oct. (regular)	6.125	6.125
†E. TEX.		
60-62, 400 e.p.	*5.125– 5.25	*5.125– 5.25
N. LA. (For shipment within La. & into Ark.)		
U. S. Motor:		
62 oct. & below	5.50	5.50
63-67 oct.	5.75 – 6.00	5.75 – 6.00
68-70 oct. (regular)	6.50	6.50
ARKANSAS (For shipment within Ark. & into La.)		
U. S. Motor:		
62 octane & below	5.50	5.50
63-67 oct.	6.00	6.00
OHIO (Quotations of S. O. Ohio. Delivered anywhere in Ohio).		
U. S. Motor	8.75	8.75
Above 65 oct.	9.00	9.00

Natural Gasoline

(Prices are those to blenders on freight basis shown below. Shipments, however, may originate in other Mid-Continent manufacturing districts, such as Panhandle Texas, S. W. Texas or Kans.)

F.O.B. GROUP 3		
Grade 26-70	4.00	**4.00
F.O.B. BRECKENRIDGE		
Grade 26-70	4.125	**4.125

**Prices shown for July 12 in July 21 issue, page 54, should have been same as these for July 19.

CALIFORNIA (F.o.b. plants in Los Angeles basin)

75-85, 350-375 e.p. for blending	7.75	7.75

*Nominal.

‡Only one refiner quoting.

†Refiners report they generally receive from 0.25c to 0.5c per gal. more for gasoline & kerosine for local or differential territory shipment.

Kerosine

Prices Effective	July 26	July 19
WESTERN PENNA.		
Bradford-Warren:		
45 w.w.	5.00 – 5.25	5.00 – 5.125
46 w.w.	5.125– 5.375	5.125– 5.25
47 w.w.	5.25 – 5.50	5.25 – 5.375
Other districts:		
45 w.w.	4.75 – 4.875	4.75 – 4.875
46 w.w.	4.875– 5.00	4.875– 5.00
47 w.w.	5.00 – 5.125	5.00 – 5.125
OKLAHOMA		
41-43	4.00 – 4.25	4.00 – 4.25
42-44 w.w.	4.25 – 4.375	4.25 – 4.375
KANSAS (For Kansas destinations only).		
41-43 w.w.	4.375– 4.50	4.375– 4.50
42-44 w.w.	4.50 – 4.75	4.50 – 4.75
†N. TEX. (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).		
41-43 w.w.	4.25 – 4.375	4.25 – 4.375
†E. TEX.		
41-43 w.w.	*3.875– 4.00	*3.875– 4.00
N. LA. (For shipment within La. and into Ark.).		
41-43 w.w.	4.625	4.625
ARK. (For shipment within Ark. and into La.).		
41-43 w.w.	‡4.75	‡4.75
CALIFORNIA		
40-43 w.w.	5.00 – 6.50	5.00 – 6.00

Gas *and* Fuel Oils

WESTERN PENNA.		
Bradford-Warren:		
36-40	4.75 – 4.875	4.75
Other districts: (Excluding Pittsburgh District Prices).		
36-40	4.375– 4.50	4.375– 4.50
OKLAHOMA		
No. 1 white	3.875– 4.00	3.875– 4.00
No. 1 straw	3.625– 3.875	3.625– 3.875
No. 2 straw	3.50 – 3.625	3.50 – 3.625
No. 2 dark	3.375– 3.50	3.375– 3.50
U. G. I. gas oil	3.00 – 3.25	3.00 – 3.25
28-30 zero	3.125– 3.375	3.125– 3.375
28-30	‡$1.25	‡$1.25
24-26	$0.90 –$0.925	$0.90 –$0.925
18-22	*$0.825–$0.90	*$0.825–$0.90
14-16	*$0.80 –$0.85	*$0.80 –$0.85
KANSAS (For Kans. destinations only).		
No. 1 p.w.f. fuel oil	4.25	4.25
10-14 fuel oil	$0.775–$0.85	$0.775–$0.85
N. TEX. (For shipment to Texas and N. Mex.; Group 3 prices quoted on northern shipments).		
No. 1 white	*4.00	*4.00
U. G. I. gas oil	2.875	2.875
24-26	$0.85 –$0.875	$0.85 –$0.875
18-22	$0.80 –$0.825	$0.80 –$0.825
N. LA. (For shipment within La. and into Ark.).		
No. 2	3.50 – 3.625	3.50 – 3.625
20-24	$1.10 –$1.15	$1.10 –$1.15
16-20	$0.95 –$1.00	$0.95 –$1.00
10-14	$0.80 –$0.85	$0.80 –$0.85
ARK. (For shipment within Ark. and into La.).		
No. 2	‡3.625	‡3.625
28-30 gas oil, zero	‡3.375	‡3.375
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.65 –$1.00	$0.65 –$1.00
Light fuel	$0.85 –$1.10	$0.85 –$1.10
Diesel fuel (per gal.)	3.50 – 4.00	3.50 – 4.00
Stove dist. (per gal.)	3.75 – 5.00	3.75 – 5.00
Los Angeles:		
Heavy fuel	$0.60 –$1.10	$0.65 –$1.10
Light fuel	$0.90 –$1.20	$0.90 –$1.20
Diesel fuel (per gal.)	3.50 – 4.00	3.50 – 4.00
Stove dist. (per gal.)	3.75 – 5.00	3.75 – 5.00
San Francisco:		
Heavy fuel	$1.15	$1.15
Light fuel	$1.25	$1.25
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

Prices Effective	July 26	July 19
WESTERN PENNA.		
Viscous Neutrals (Viscosity at 70° F.)		
200 Vis. (180 at 100°) No. 3 col., 420-425 fl.:		
0 p.t.	27.00 –28.00	27.00 –28.00
10 p.t.	26.00 –27.00	26.00 –27.00
15 p.t.	25.50 –26.50	25.50 –26.50
25 p.t.	24.50 –25.50	24.50 –25.50
180 Vis. (165 at 100) No. 3 col., 410-415 fl.:		
25 p.t.	23.00 –24.00	23.00 –24.00
150 Vis. (143 at 100) No. 3 col., 400-405 fl.:		
0 p.t.	22.50 –23.50	22.50 –23.50
10 p.t.	21.50 –22.50	21.50 –22.50
15 p.t.	21.00 –22.00	21.00 –22.00
25 p.t.	20.00 –21.00	20.00 –21.00
SOUTH TEXAS		
Vis. Color		
Pale Oils: (*Vis. at* 100° *F.; p.t.* 0)		
100 No. 1½-2½	5.25 – 5.50	5.25 – 5.50
200 No. 2-3	7.25 – 7.50	7.25 – 7.50
300 No. 2-3	7.75 – 8.00	7.75 – 8.00
500 No. 2½-3½	8.75 – 9.00	8.75 – 9.00
750 No. 3-4	9.25 – 9.50	9.25 – 9.50
1200 No. 3-4	9.75 –10.00	9.75 –10.00
2000 No. 4	10.00 –10.25	10.00 –10.25
Red Oils:		
200 No. 5-6	7.25 – 7.50	7.25 – 7.50
300 No. 5-6	7.75 – 8.00	7.75 – 8.00
500 No. 5-6	8.75 – 9.00	8.75 – 9.00
750 No. 5-6	9.25 – 9.50	9.25 – 9.50
1200 No. 5-6	9.75 –10.00	9.75 –10.00
2000 No. 5-6	10.00 –10.25	10.00 –10.25

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

	(0 to 10 P.P.)	
Pale Oils:		
Vis. Color		
60-85—No. 2	5.50	5.50
86-110—No. 2	6.00	6.00
150—No. 3	9.00	9.00
180—No. 3	10.00	10.00
200—No. 3	10.50	10.50
250—No. 3	11.50	11.50
280—No. 3	12.50	12.50
300—No. 3	13.00	13.00
Red Oils:		
180—No. 5	9.00	9.00
200—No. 5	9.50	9.50
250—No. 5	10.50	10.50
280—No. 5	11.50	11.50
300—No. 5	11.75	11.75

Note: Viscous oils, 15-25 p.p., generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils **0 to 10 p.p.:		
Vis. Color		
60-85—No. 2	7.25	7.25
86-110—No. 2	7.75	7.75
150—No. 3	10.00	10.00
180—No. 3	11.00	11.00
200—No. 3	11.50	11.50
250—No. 3	12.50	12.50
Red Oils:		
180—No. 5	10.00	10.00
200—No. 5	10.50	10.50
250—No. 5	11.50	11.50
280—No. 5	12.50	12.50
300—No. 5	12.75	12.75

**Viscous oils, 15 to 30 p.p. are quoted 0.5c lower, 60-85 and 85-110 No. 2 non-viscous oils, 15 to 30 p.p., are quoted 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis).

Bright Stocks:		
190-200 Vis. at 210° D	22.00	22.00
150-160 Vis. at 210° D:		
0 to 10 p.p.	19.00	19.00
10 to 25 p.p.	18.50	18.50
25 to 40 p.p.	18.00	18.00
150-160 vis. at 210° E	18.00	18.00

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GENERAL OFFICES - - - FINDLAY, OHIO
ROBINSON, ILLINOIS
TULSA, OKLAHOMA,
FT. WORTH, TEXAS

reluctant to advance their prices for fear of shutting off their market.

Following the sharp decline in lubricating oils the second week of July, still lower priced transactions were reported last week in inter-refinery trading, but as far as could be determined quotations to jobbers showed no further revisions. Inventories of bright stock and neutral oil were said to be climbing and refinery crude runs remained at a high level.

Mid-Western

Refiner Buying Continues

N. P. N. News Bureau

CHICAGO, July 26.—Continued buying of gasoline by a refiner was the outstanding feature of the Mid-Western market the week ended July 24. In the past two weeks this refiner has purchased more than 200 cars of various grades of gasoline.

With the exception of a one-day fall and rise, gasoline prices were steady throughout the week, more as the result of refiner-purchases than any other single market development.

The dip in low octane gasoline prices about mid-week resulted from an influx of offerings which did not find ready movement due to the lack of jobber buying.

A somewhat anomalous situation arose in the Mid-Western market last week when reports of a refiner buying gasoline prompted another large refiner to report he was seeking an outlet for an "oversupply" of low and high octane gasoline. Whether inter-refinery trading between the refiner on the buying side of the market, and the other refiner developed, could not be ascertained. Prices quoted for the various grades in this "oversupply" were not disclosed.

Buying in tank wagon lots by jobbers who normally trade in the open market was confirmed late last week. Prices paid for leaded regular gasoline in this type of transaction figured back about 5.59 cents on a group 3 basis.

While kerosine was not as freely offered as had been the case the past several weeks, interest in this product was at a standstill and prices were easy.

Coastal

Market Quiet

N. P. N. News Bureau

NEW YORK, July 26.—Cargo markets were quiet at the Gulf the past week and no export or domestic sales were reported.

All products were reported steady, however, and no price changes were noted. Following the last sale involving U. S. Motor gasoline at 6.0625 cents a gallon for export, suppliers generally quoted 6.125 cents for this grade. Domestic buyers continued to show no interest in ordinary U. S. Motor gasoline for coastwise shipment, preferring the higher octane grades.

No above 65 octane gasoline was available for domestic cargo lifting at under 6.5 cents a gallon, traders said. One domestic supplier purchased a full cargo of 68-70 octane gasoline for domestic coastwise lifting at 6.5 cents. The purchase was made late in the previous week but was not reported then.

Demand for gas oil has moderated considerably, traders said, but on the other

(*Continued on page* 60)

Fuel Oil . . .

TULSA, July 26.—Northern distributors and other buyers of heating oil have renewed efforts to obtain next winter's light fuel. Distributor inquiries for No. 1 oil totaling three million gallons were received by one company. In addition, two Mid-Continent refiners were seeking large quantities of Nos. 1 and 3 oils to apply on their supply contracts. Inquiries received by this company were fairly representative of those received by other Mid-Continent refiners.

Light fuel oil inquiries were placed at a time when most refiners were not anxious or even willing to part with large quantities. In fact some have not yet begun making heating oils; others were storing.

No change was noted in the heavy fuel oil situation.

* * *

NEW YORK, July 26.—Light fuel oil markets were steady along the eastern seaboard last week. Terminal tank car prices were reported unchanged for open market shipment. Suppliers generally said that movement was fairly good for the season but nothing out of the ordinary. The lower boat rates now prevailing from the Gulf to north Atlantic may induce distributors to bring more fuel oil north, but the spread between Gulf and Atlantic seaboard prices still was too narrow to make it very attractive, they said.

Some traders reported bunker fuel oil was more freely offered at New York harbor, but that prices remained unchanged.

* * *

CHICAGO, July 26.—While sales of light fuel oil for storage were reported few by Chicago sellers, nevertheless many inquiries invaded the market last week, according to reports.

The absence of actual sales in the face of heavy inquiry was credited to the fact that buyers and sellers' ideas of prices still were at least 0.25 cent apart.

Industrial oils received scant attention from the majority of traders here. Easiness of several grades was apparent as offerings were not finding ready takers.

No changes were recorded in either light or heavy fuel oil prices during the week.

Tank Wagon Price Up

TULSA, July 26. — Consumer tank wagon gasoline and kerosine prices at depressed Kansas and western Missouri points will be advanced one-half cent July 28, Socony-Vacuum Oil Co., Inc., White Eagle Division, has announced. Tractor fuel prices also will be advanced at many points in this area.

Advance was made "because of unreasonably low markets at many points in Kansas and western Missouri," the announcement said.

Crude Price Changes

MT. PLEASANT, Mich., July 26.—Effective July 22, Simrall Corp. reduced West Branch, Arenac and equal grades of Michigan crude 12 cents, to a new price of $1.09 per barrel.

Effective July 23 it reduced Beaverton, Crystal, Greendale, Porter and equal grades and Buckeye crude 15 cents, to new price of $1.27 for the former group, and $1.245 for Buckeye.

Effective July 23 Pure Oil Co. reduced Midland, Midland county, 15 cents, to new price of $1.27 per barrel.

Production for the entire state of Michigan is now estimated to be between 45,000 and 50,000 barrels daily. The all-time

(*Continued on page* 60)

TANK WAGON MARKETS, HEATING OILS

Prices in Effect July 26, 1937

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 3	No. 4
S. O. NEW JERSEY				
Newark, N. J.	*	7.00	7.00	7.00
Atlantic City, N. J.	*	6.75	6.75	6.75
Baltimore, Md.	7.50	7.00	7.00	7.00
Washington, D. C.	7.75	7.25	7.25	7.25
SOCONY-VACUUM OIL CO., INC. (S. O. New York Division)				
New York City	*	7.50	7.50	7.50
Albany, N. Y.	*	7.50	7.50	7.50
Rochester, N. Y.	*	7.50	7.50	7.50
Boston, Mass.	*	7.00	7.00	7.00
Bangor, Me.	*	8.00	8.00	8.00
Manchester, N. H.	*	8.00	8.00	8.00
Burlington, Vt.	*	8.00	8.00	8.00
New Haven, Conn.	*	7.50	7.50	7.50
Providence, R. I.	*	6.75	6.75	6.75

*Prices for No. 1 fuel in S. O. New Jersey and Socony-Vacuum territories same as for kerosine, which see in tank wagon table for various cities; prices change with kerosine.

	No. 1	No. 2	No. 3	No. 4
ATLANTIC REFINING				
Philadelphia, Pa.	7.25	6.50	6.50	6.50
Allentown, Pa.	7.25	6.50	6.50	6.50
Wilmington, Del.	7.75	7.00	7.00	7.00
Springfield, Mass.	9.00	7.50	....	7.50
Worcester, Mass.	9.00	7.50	....	7.50
Hartford, Conn.	9.00	7.50	....	7.50

S. O. OHIO

*Ohio Statewide	8.00	8.00	7.50	6.75

Note: S. O. Ohio prices are for hose dumps, bucket dumps are 0.5c per gallon higher.

*Except Cleveland Division and City of Toledo. In Cleveland Division (Cuyahoga, Lake and Geauga counties), No. 1 price is same as statewide; Nos. 2, 3 and 4 are 0.5c higher; No. 5 is priced 0.25c lower than No 4. In Toledo No. 2 is 0.5c lower than statewide, others same.

S. O. INDIANA

Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	7.00	7.00
Indianapolis	....	*11.7
Detroit	....	7.1
Milwaukee	8	7.3
Minneapolis	7.5	7.5
Sioux City	7.1	7.1
St. Louis	7.5	6.8
Kansas City	6.5	6.5

*Includes state tax of 4c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Cylinder Stocks (cont'd)

Prices Effective	July 26	July 19
Mid-Continent (cont'd)		
120 Vis. at 210° D:		
0 to 10 p.p.	18.00	18.00
10 to 25 p.p.	17.50	17.50
25 to 40 p.p.	17.00	17.00
600 S.R. Dark Green	5.00 – 7.50	5.00 – 7.50
600 S.R. Olive Green	7.00 – 9.50	7.00 – 9.50
631 S.R.	‡16.00	‡16.00
Black Oil	3.50 – 4.00	3.50 – 4.00
CHICAGO (Viscosity at 210°)		*
Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	20.75	*20.75
15 to 25 p.p.	20.25	*20.25
30 to 40 p.p.	19.75	*19.75
E filtered Cyl. Stock	15.50	15.50

To obtain prices delivered in Chicago, add 0.25c per gal.

‡Only one refiner quoting.
*These are correct prices for July 19.

Prices Effective	July 26	July 19
WESTERN PENNA.		
600 S.R. filterable	14.00 –15.00	14.00 –15.00
650 S.R.	16.50 –17.50	16.50 –17.50
600 fl.	17.50 –18.50	17.50 –18.50
630 fl.	21.50 –22.50	21.50 –22.50
600 Warren E.	17.50 –18.50	17.50 –18.50
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	24.00 –26.00	24.00 –26.00
15 p.t.	23.00 –25.00	23.00 –25.00
20 p.t.	22.00 –24.00	22.00 –24.00
25 p.t.	21.00 –23.00	21.00 –23.00

Petrolatums

WESTERN PENNA. (Per lb., in barrels, carload lots. In tank cars, 0.5c per lb. less).

Snow white	6.625– 6.75	6.625– 6.75
Lily White	5.625– 5.75	5.625– 5.75
Cream White	4.625– 4.75	4.625– 4.75
Light Amber	2.75 – 2.875	2.75 – 2.875
Amber	2.50 – 2.625	2.50 – 2.625
Red	2.125– 2.375	2.125– 2.375

Wax

Prices Effective	July 26	July 19
WESTERN PENNA. (Per lb., f.o.b. N. Y. basis)		
122-124 w.c. scale, A.m.p.	2.95 – 3.00	2.95 – 3.00
124-126 w.c. scale, A.m.p.	3.00	3.00
OKLAHOMA (Per lb. in bbls.; in a few instances, per lb. in burlap bags).		
124-126 w.c. scale, A.m.p.	3.00	3.00

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.65 – 4.75	4.65 – 4.75
125-127	4.90 – 5.00	4.90 – 5.00
127-129	5.05 – 5.15	5.05 – 5.15
130-132	**5.45 – 5.55	**5.45 – 5.55
132-134	**5.70 – 5.80	**5.70 – 5.80
135-137	**6.45 – 6.55	**6.45 – 6.55

**Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKET

Prices are those made by Chicago sellers, on Group 3 (Oklahoma) freight basis, although shipments may originate in other South-western or Mid-western refining districts

Gasoline

Prices Effective	July 26	July 19
U. S. Motor:		
62 oct. and below	5.00 – 5.25	5.00 – 5.25
63-67 oct.	5.25 – 5.50	5.25 – 5.50
68-70 oct. (regular)	5.75 – 6.125	5.75 – 6.125
60-62, 400 e.p.	5.00 – 5.25	5.00 – 5.25
64-66, 375 e.p.	‡5.25	‡5.25
68-70, 350-360 e.p.	‡5.375	‡5.375

Kerosine

41-43 w.w.	3.875– 4.125	3.875– 4.125
42-44 w.w.	4.00 – 4.25	4.00 – 4.25

*Nominal
‡Only one seller quoting.

Fuel *and* Gas Oils

Prices Effective	July 26	July 19
Domestic:		
No. 1 p.w.	3.75 – 3.875	3.75 – 3.875
No. 1 straw	3.50 – 3.75	3.50 – 3.75
No. 2 straw	3.375– 3.50	3.375– 3.50
No. 2 dark	3.125– 3.375	3.125– 3.375
No. 3	3.00 – 3.25	3.00 – 3.25
No. 4	$1.05 –$1.15	$1.05 –$1.15
No. 5	$0.85 –$0.90	$0.85 –$0.90
Industrial:		
No. 4	$0.95 –$1.05	$0.95 –$1.05
No. 5	$0.75 –$0.85	$0.75 –$0.85

Prices Effective	July 26	July 19
Industrial (cont'd)		
No. 6	$0.70 –$0.80	$0.70 –$0.80
U. G. I. gas oil	2.875– 3.25	2.875– 3.25

Naphtha and Solvent

Stoddard solvent	6.875	6.875
Cleaners' naphtha	7.375	7.375
V. M. & P. naphtha	7.375	7.375
Mineral spirits	6.375	6.375
Rubber solvent	7.375	7.375
Lacquer diluent	8.375	8.375

DAILY GASOLINE PRICES

Daily range of gasoline prices as reported in PLATT'S OILGRAM, (Week Ended July 23, 1937)

	July 19	July 20	July 21	July 22	July 23
U. S. Motor, 62 oct. & below:					
*North Texas	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25
West Texas	5.125	5.125	5.125	5.125	5.125
Oklahoma	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
Mid-Western (Group 3 basis)	5.00 – 5.25	4.875– 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
U. S. Motor, 63-67 oct.:					
*North Texas	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625
West Texas	5.50	5.50	5.50	5.50	5.50
Oklahoma	5.375– 5.75	5.375– 5.75	5.375– 5.75	5.375– 5.75	5.375– 5.75
Mid-Western (Group 3 basis)	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50	5.25 – 5.50
U. S. Motor, 68-70 oct. (regular)					
*North Texas	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
West Texas	6.125	6.125	6.125	6.125	6.125
Oklahoma	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Mid-Western (Group 3 basis)	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125	5.75 – 6.125
Motor Gasoline, 60-64 oct.					
New York harbor	†7.25 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
Philadelphia district	†7.25	†7.25	†7.25	†7.25 – 7.75	†7.50
Baltimore district	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
Motor Gasoline, 65 oct. & above					
New York harbor	†7.50 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.50 – 8.00
Philadelphia district	†7.50	†7.50	†7.50	†7.50 – 8.00	†7.75
Baltimore district	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00	†7.75 – 8.00
U. S. Motor, 58-62°					
Bradford-Warren (Western Penna.)	6.00 – 6.125	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Other districts (Western Penna.)	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125	6.00 – 6.125
Motor Gasoline, Min. 60 oct.					
Bradford-Warren (Western Penna.)	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50	†7.375– 7.50
Other districts (Western Penna.)	7.375– 7.75	7.375– 7.75	7.375– 7.75	7.375– 7.75	7.375– 7.75
Motor Gasoline, Min. 65 oct.					
Bradford-Warren (Western Penna.)	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75	†7.50 – 7.75
Other districts (Western Penna.)	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00	7.50 – 8.00

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipment.
†Nominal.

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect July 26, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. New Jersey

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	8	9.5	4	*	9
Newark, N. J.	8	9.5	4	*	9
Annapolis, Md.	9.1	10.6	5	*	9.5
Baltimore, Md	8.5	10	5	18.5	9
Cumberland, Md	9.9	12.4	5	*	10
Washington, D. C.	8.5	10	3	16.5	9.5
Danville, Va.	9.7	12.2	6	*	12.9
Norfolk, Va.	8.5	11	6	*	11.5
Petersburg, Va.	8.8	11.3	6	*	11.7
Richmond, Va.	8.8	11.3	6	*	11.7
Roanoke, Va.	10	12.5	6	*	12.9
Charleston, W. Va.	9.3	11.8	6	*	12.6
Parkersburg, W. Va.	8.6	11.1	6	*	11.2
Wheeling, W. Va.	9.5	11	6	*	12.2
Charlotte, N. C.	9.9	12.4	7	*	12.6
Hickory, N. C.	10.4	12.9	7	*	13
Mt. Airy, N. C.	10.2	12.7	7	*	12.8
Raleigh, N. C.	9.5	12	7	*	12.1
Salisbury, N. C.	10	12.5	7	*	12.7
Charleston, S. C.	8.5	11	7	*	11.1
Columbia, S. C.	9.5	12	7	*	12.1
Spartanburg, S. C.	10.2	12.7	7	*	12.9

*S. O. New Jersey transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year, consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal. over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

SOCONY MOBILGAS

	Consumer Tank Car	"Split" Dealer T.W.	Taxes	Total "Split" Dealer T.W.	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	8.5	10	*5	15	9
Borough of Richmond (Staten Is.)	8.5	10	*5	15	9
Albany, N. Y.	8.5	10	5	15	9
Binghamton, N. Y.	9.7	10.8	5	15.8	9.5
Buffalo, N. Y.	8.67	10.3	5	15.3	8.5
Jamestown, N. Y.	8.28	10.8	5	15.8	8.25
Plattsburg, N. Y.	8.9	10.9	5	15.9	9.5
Rochester, N. Y.	8.74	10.3	5	15.3	8.5
Syracuse, N. Y.	9.1	10.5	5	15.5	9
Danbury, Conn.	8.8	10.3	4	14.3	9
Hartford, Conn.	8.6	10.6	4	14.6	9
New Haven, Conn.	8.5	10	4	14	9
Bangor, Me.	9.1	11.3	5	16.3	9.5
Portland, Me.	8.5	10.8	5	15.8	8.75
Boston, Mass	8.5	10	4	14	8.5
Concord, N. H.	9.2	11.8	5	16.8	9.5
Lancaster, N. H.	10.1	12.8	5	17.8	10.25
Manchester, N. H.	9	11.3	5	16.3	9.5
Providence, R. I.	8.5	10	4	14	8.25
Burlington, Vt.	8.9	10.9	5	15.9	9.5
Rutland, Vt.	9.2	11.2	5	16.2	9.75

*Plus 2% city sales tax computed at time of each sale.

Note: Socony-Vacuum has transferred all service stations to dealers; no prices available.

Price basis to undivided dealers: 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England, for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Atlantic Refining

ATLANTIC WHITE FLASH GASOLINE

	Commercial Tank Car	All Tax	Total Dealer T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	8	5	14.5	18	10.5
Pittsburgh	8.5	5	15.5	20	11
Allentown	8.5	5	15	**	11
Erie	8	5	14.5	**	10
Scranton	8.5	5	15	**	11
Altoona	8.5	5	15.5	**	11
Harrisburg	8.5	5	15	**	11
Williamsport	8.5	5	15.5	**	11
Dover, Del.	...	5	14.5	**	11
Wilmington	...	5	14	**	11
Boston, Mass.	...	4	14	**	8.5
Springfield, Mass.	...	4	14.8	**	9
Worcester, Mass.	...	4	14.8	**	9
Fall River, Mass.	...	4	13	**	8.5
Hartford, Conn.	...	4	14.6	**	9
New Haven, Conn.	...	4	14	**	9
Providence, R. I.	...	4	14	**	8.5
Atlantic City, N. J.	...	4	13.5	**	8.5
Camden, N. J.	...	4	13.5	**	8.5
Trenton, N. J.	...	4	13.5	**	8.5
Annapolis, Md.	...	5	15.6	**	9.5
Baltimore, Md.	...	5	15	**	9
Hagerstown, Md.	...	5	16	**	10
Richmond, Va.	...	6	17.3	**	11.7
Wilmington, N. C.	...	7	18.1	**	11.3
Brunswick, Ga.	...	7	16	**	*13
Jacksonville, Fla.	...	8	17.5	**	11

*Georgia has kerosine tax of 1c per gal., not included in above price.

**Atlantic Refining transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. less 0.5c per gal.

Price basis to commercial consumers: in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases to contract accounts taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware, 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

SOHIO X-70 GASOLINE

	All Tax	**Commercial T.W.	†Divided Dlr.	Kerosine T.W.
Ohio State-Wide	5	17	15.5	16	*13.5
Counties where prices are below statewide:					
Columbiana	5	16.5	15	15.5	....
Defiance, Franklin, Knox and Pickaway:	5	16	14.5	15	....
Paulding	5	15.5	14	14.5	....

RENOWN GASOLINE (Third Grade)

Ohio State-Wide	5	16.5	15	15.5	....
Counties where prices are below statewide:					
Columbiana	5	16	14.5	15	....
Defiance, Franklin, Knox, and Pickaway	5	15.5	14	14.5	....
Paulding	5	15	13.5	14	....
Counties where prices are above statewide. Butler, Clermont, Darke, Greene, Hamilton, Hocking, Miami, Montgomery, Preble, Summit, and Warren	5	17	15.5	16	....

KEROSINE PRICES

(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Gallia and Washington *13

Allen, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hancock, Hardin, Logan,

S. O. Ohio Cont'd

Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull, Union, Van Wert and Wyandot: *12.5

Paulding *12

Ashtabula *11.5

Fayette, Licking, Madison, Pickaway, Portage and Summit ..... * 9.5

*Kerosine prices include 1c state tax.

**Tank wagon price to commercial consumers, in t.w. deliveries of 25 gals. or more; less than 25-gal. deliveries get s.s. price. Price to undivided dealers is same as to commercial consumers.

O. D. A. to t.w. consumers, established July 19, 1937, in counties of Defiance, Erie, Fulton, Hamilton, Henry, Lucas, Ottawa, Sandusky, Williams and Wood. For further information, write National Petroleum News.

†This price also to authorized agents, exclusive of 0.5c rental.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on state-wide level.

S. O. Kentucky

CROWN GASOLINE

(Regular Grade)

	Consumer T.W.	All Tax	Total Consumer T.W.	Net Dlr.	Kerosine T.W.
Covington, Ky.	13.5	6	19.5	16.5	11
Lexington, Ky.	14	6	20	17	11
Louisville, Ky.	14	6	20	17	10.5
Paducah, Ky.	14	6	20	17	8
Jackson, Miss.	14	7	21	18	*13
Vicksburg, Miss.	13.5	7	20.5	17.5	*13
Birmingham, Ala.	11.5	*8	19.5	16.5	12
Mobile, Ala.	13	*9	22	19	11
Montgomery, Ala.	13	*9	22	19	*14.5
Atlanta, Ga.	15	7	22	19	*13
Augusta, Ga.	14	7	21	18	*14
Macon, Ga.	14.5	7	21.5	18.5	*14.5
Savannah, Ga.	12	7	19	16	*12
Jacksonville, Fla.	12.5	8	20.5	17.5	11
Miami, Fla.	12.5	8	20.5	17.5	11.5
Pensacola, Fla.	13	*9	22	19	12
Tampa, Fla.	11	8	19	16	10.5

KYSO GASOLINE

(Third Grade)

Covington, Ky.	12	6	18	15.5	....
Lexington, Ky.	12.5	6	18.5	16	....
Louisville, Ky.	12	6	18	15.5	....
Paducah, Ky.	12	6	18	15.5	....
Jackson, Miss.	12.5	7	19.5	17	....
Vicksburg, Miss.	12	7	19	16.5	....
Birmingham, Ala.	10	*8	18	15.5	....
Mobile, Ala.	10.5	*9	19.5	17	....
Montgomery, Ala.	10.5	*9	19.5	17	....
Atlanta, Ga.	13	7	20	17.5	....
Augusta, Ga.	12	7	19	16.5	....
Macon, Ga.	10.5	7	17.5	15	....
Savannah, Ga.	10.5	7	17.5	15	....
Pensacola, Fla.	11	*9	20	17.5	....

Discounts to tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below.

Discounts on kerosine: Prices in Kentucky are net, but in other states subject to 2c discount.

Taxes: in the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Mississippi kerosine prices include 1c state tax. Montgomery kerosine price includes 1c city tax.

S. O. Indiana

	Red Crown Tax	Dealer Prices Red Crown T.W.	Red Crown Total	Stanolind	Kerosine T.W.
Chicago, Ill.	4	15.5	13.5	12	10.1
Decatur, Ill.	4	15.5	14	13.5	10.1
Joliet, Ill.	4	15.5	14	13.5	10.1
Peoria, Ill.	4	15.5	14	13.5	10.1
Quincy, Ill.	4	15.3	13.8	13.3	7.6
Indianapolis, Ind.	5	17.2	15.7	14.7	*13.6
Evansville, Ind.	5	17	15.5	13	*14.6
South Bend, Ind.	5	17.4	15.9	15.4	*13.6
Detroit, Mich.	4	15.4	13.9	13.4	9.8
Grand Rapids, Mich.	4	16.5	15	14.5	10.9
Saginaw, Mich.	4	16.3	14.8	14.3	8.5
Green Bay, Wis.	5	17.2	15.7	14.7	8.6
Milwaukee, Wis.	5	16.8	15.3	14.2	10.4

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal., in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect July 26, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. Indiana Cont'd

	Red Crown Total Tax	Dealer Prices Red Crown T.W.	Stano-lind	Kero-sine T.W.
La Crosse, Wis	5	16.9	15.4	14.9	10.5
Minneapolis-St. Paul	5	16.9	15.4	14.9	10.5
Duluth, Minn	5	17.3	15.8	15.3	10.9
Mankato, Minn	5	16.9	15.4	14.9	10.5
Des Moines, Ia	4	15.3	13.8	13	*12 9
Sioux City, Ia	4	15.5	14	13.5	*13.1
Davenport, Ia	4	15.5	14	13.5	*13.1
Mason City, Ia	4	15.7	14.2	13.7	*13 3
St. Louis, Mo	*4	15.2	13.7	12.2	9 8
Kansas City, Mo	*4	14.9	13.4	12.9	8 9
St. Joseph, Mo	*4	14.9	11.4	11.4	6 9
Fargo, N. D.	4	16.9	15.4	14.9	11.5
Minot, N. D.	4	18.1	16.6	16.1	12.7
Huron, S. D.	*5	17.3	15.8	15.3	*10 9
Wichita, Kans	4	14.4	12.9	12 4	7.5

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax; South Dakota, 0.1c sales tax. State Kerosine taxes: Indiana, 4c; Iowa, 3c, all included in above prices.

Discount to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices: all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 1c on Stanolind (latter effective June 9, 1937). Minimum delivery is 25 gals.

S. O. Nebraska

STANDARD RED CROWN GASOLINE

	All Tax	T.W. Total	Dealer Total	Kero-sine T.W.
Omaha, Neb	6	17.9	16.4	10.4
McCook	6	18	17.1	10
Norfolk	6	18.3	16.8	10.8
North Platte	6	18.7	17.2	11.2
Scottsbluff	6	19.4	17.9	10.9

Discounts to commercial consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Tax-es	Posted S.S.	Kero-sine T.W.
Little Rock, Ark	8.5	11	7.5	**	11.5
Alexandria, La	8.5	11	8	**	*12
Baton Rouge, La	8	10.5	8	22	*12
New Orleans, La	8	10.5	*10	24	*13
Lake Charles, La	9	11.5	8	**	*12.5
Shreveport, La	7.5	10	8	**	*9.5
Lafayette, La	9	11.5	8	**	*13
Bristol, Tenn	11	12.25	8	**	14.5
Chattanooga, Tenn	10.5	13	8	**	13.5
Knoxville, Tenn	11	13.5	8	**	14
Memphis, Tenn	9	11.5	8	**	12
Nashville, Tenn	10	12.5	8	**	11

*New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana kerosine prices include 1c state tax; in addition New Orleans has 1c parish tax.

**S. O. Louisiana transferred stations to dealers; no prices available.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective May 15, 1937, thru territory; commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Humble Oil & Refining Co.

HUMBLE MOTOR FUEL

	*100% Dlr. T.W.	Total Taxes	*100% Dlr. T.W.	S.S.	Kero-sine T.W.
Dallas, Tex	8.5	5	13.5	17	8
Ft. Worth, Tex	9	5	14	18	8
Houston, Tex	9.5	5	14.5	18.5	8
San Antonio, Tex	9.5	5	14.5	18.5	8
(Third Grade)					
Dallas, Tex	7	5	12	14	
Ft. Worth, Tex	8	5	13	16	
Houston, Tex	8.5	5	13.5	16.5	
San Antonio, Tex	8.5	5	13.5	16.5	

*Price is t.w. price to contract dealers and commercial consumers. Price to open dealers is 0.5c above t.w. prices shown above.

Price basis to dealers: to contract dealers consumer accounts off posted retail price: when posted retail price, including all taxes on Esso motor fuel is: 19.1c per gal. and above discount is 4c; 19c to 18.1c, 3.5c, and 18c and below, 3c. Humble motor fuel, 17.1c and above, 4c; 17 to 16.1c, 3.5c; and 16c and below, 3c; U. S. motor fuel, 15.1c and above, 3c; 15 to 14.1c, 2.5c; and 14c and below, 2c. To "open" dealer accounts, discounts in each case are 0.5c less on the same price basis.

Continental Oil

	Conoco Bronze Ex-Tax	All Tax	Dealer Prices Total Conoco Bronze	De-mand	Kero-sine T.W.
Denver, Colo	12.5	5	17.5	16.5	11.5
Grand Junc., Colo	15	5	20	19	15
Pueblo, Colo	11	5	16	15	10.5
Casper, Wyo	13	5	18	17	11.5
Cheyenne, Wyo	13	5	18	17	13
Billings, Mont	14	6	20	18	15.5
Butte, Mont	13.5	6	19.5	16.5	15.5
Great Falls, Mont	15.5	6	21.5	20.5	15.5
Helena, Mont	15.5	6	21.5	20.5	15.5
Salt Lake City, Utah	14.5	5	19.5	16.5	16
Boise, Ida	15.5	6	21.5	20.5	18
Twin Falls, Ida	15.5	6	21.5	20.5	18
Albuquerque, N. M.	11	†6.5	17.5	16.5	12
Roswell, N. M.	12	†6.5	18.5	15	10.5
Santa Fe, N. M.	13	*7	20	16.5	12
Muskogee, Okla	10	5	15	13	7
Oklahoma City, Okla	9	5	14	11	8
Tulsa, Okla	9	5	14	13	7
Ft. Smith, Ark	8.5	5	13.5	12.5	10
Little Rock, Ark	10.5	7.5	18	16	9.5
Texarkana, Ark	10	5	15	13	9

†Includes city tax of 0.5c.
*Includes 1c city tax.

S. O. California

STANDARD GASOLINE

	T.W.	Taxes	Total T.W.	S.S.	Kero-sine T.W.
San Francisco, Cal	13.5	4	17.5	18.5	11.5
Los Angeles, Cal	13	4	17	18	9
Fresno, Cal	14 5	4	18.5	19 5	12
Phoenix, Ariz	15	6	21	22	†16
Reno, Nev	15	5	20	21	13
Portland, Ore	14	6	20	21	13.5
Seattle, Wash	14	6	20	21	13.5
Spokane, Wash	17	6	23	24	16.5
Tacoma, Wash	14	6	20	21	13.5

FLIGHT GASOLINE
(Third Grade)

San Francisco, Cal	12	4	16	17	....
Los Angeles, Cal	11.5	4	15.5	16.5	....
Fresno, Cal	13	4	17	18	....
Reno, Nev	13.5	5	18.5	19.5	....
Phoenix, Ariz	13.5	6	19.5	20.5	....
Portland, Ore	12.5	6	18.5	19.5	....
Seattle, Wash	12.5	6	18.5	19.5	....
Spokane, Wash	15.5	6	21.5	22.5	....
Tacoma, Wash	12.5	6	18.5	19.5	....

†Includes 5c state tax.

Discount to dealers: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers, 2c; on Flight gasoline, both 100% and split dealers, 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w.

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over, Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal above posted t.w. price.

On kerosine in tank car, transport truck and trailer delivery, 3c off t.w. price; plant deliveries to jobbers, 2.5c below t.w.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-STAR IMPERIAL GASOLINE

	T.W.	Taxes	Total T.W.	Kero-sine T.W.
Hamilton, Ont	16	6	22	17
Toronto, Ont	16	6	22	17
Brandon, Man	22.8	7	29.8	22.3
Winnipeg, Man	21.2	7	28.2	20.7
Regina, Sask	22.5	7	29.5	22
Saskatoon, Sask	25.3	7	32.3	24.8
Edmonton, Alta	23.5	7	30.5	24.2
Calgary, Alta	21	7	28	21.5
Vancouver, B. C.	16	7	23	23
Montreal, Que	15	6	21	17.5
St. John, N. B.	16	8	24	18.5
Halifax, N. S.	16	8	24	18.5

Note: Imperial Oil Ltd. has completed transfer of service stations to dealers; no s.s. prices available.

Discounts to undivided dealers, 1c off t.w price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil and unless otherwise noted). Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

S. O. NEW JERSEY

	*Ethyl T.C.	Tank Car	T.W.
Bayonne, N. J.	15.5	9.5	12.5
Baltimore, Md.	14.5	10	12.5
Washington, D. C.	....	....	13.1
Richmond, Va.	....	....	15.2
Greensboro, N. C.	....	....	15.7
Raleigh, N. C.	....	....	17.1
Charleston, W. Va.	....	....	15.2

*This is Stanavo Ethyl Aviation Gasoline, 100 octane number, tank car price.

COLONIAL BEACON OIL CO.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	14.1
Boston, Mass.	15

S. O. PENNSYLVANIA

Philadelphia, Pa.	12.8
Pittsburgh, Pa.	13.1

S. O. LOUISIANA

New Orleans, La.	13.8
Shreveport, La.	14.1

Prices in above four territories do not include state or federal taxes. They are for 74 octane grade aviation gasoline except where otherwise noted. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 74 octane grade.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. OHIO

Thru Ohio

	Consumer T.W.	Tax	Total Consumer T.W.
Stanavo Ethy Aviation:			
73 octane	15.5	5	20.5
80 octane	16.5	5	21.5
87 octane	17.5	5	22.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price, shown above.

S. O. INDIANA

Chicago, Ill	15	4	19
Detroit, Mich	16.2	4	20.2
Milwaukee, Wisc	15.3	5	20.3
Minneapolis, Minn	15.4	5	20.4
St. Louis, Mo	14.7	*3	17.7
Kansas City, Mo	14.4	*4	18.4
Fargo, N. D.	16.4	4	20.4
Huron, S. D.	15.8	5	20 8

*Includes 1c city tax.
**Includes 0.1c to cover.

HUMBLE OIL & REFINING CO.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.5

CONTINENTAL OIL CO.

	Dealer	Tax	Total Dealer
Denver, Colo	15.5	5	20.5
Cheyenne, Wyo	16	5	21
Helena, Mont	18.5	6	24.5
Salt Lake City, Utah	17.5	5	22.5
Albuquerque, N. M.	14	*6.5	20.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA

Phoenix, Ariz	17	6	23
Los Angeles, Cal	15	4	19
San Francisco, Cal	15.5	4	19.5
Reno, Nev	17	5	22
Portland, Ore	16	6	22
Seattle, Wash	16	6	22
Spokane, Wash	19	6	25

Note: For discounts, etc., see note under Standard and Flight gasoline above.

TANK WAGON MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect July 26, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

Naphtha (In Tank Wagon)

S. O. NEW JERSEY

	Posted Tank Wagon Prices Mineral Spirits	V.M.&P.
Newark, N. J.	13.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	13	14
New York City	11	12
Rochester, N. Y.	12	15
Syracuse, N. Y.	14	15
Boston, Mass.	13.5	14
Bridgeport, Conn.	13.5	14
Hartford, Conn.	13	13.5
Providence, R. I.	13.5	14.5

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	13.25	13.75

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA

(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	15.8	16.1	15.5
Detroit, Mich.	19.2	18.2	19.3
Kansas City, Mo.	14.4	15.4	14.4
St. Louis, Mo.	14.7	15.7	14.6
Milwaukee, Wis.	19.3	20.3	19.3
Minneapolis, Minn.	19.4	20.4	18

Note: Prices for V. M. & P. apply also to Light Cleaners Naphtha. All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	11	10
New York Harbor	11	10
Philadelphia district	11	10
Boston	10.5	10
Providence	10.5	10
Ohio points, delivered	9.75	*9.25

*This is on S.R. solvent.

Note: In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.

Latest Changes

From July 20 to July 26 inclusive. Dates and amounts of changes shown. See table for full current prices.

S. O. New Jersey—Kerosine and No. 1 Fuel Oil:

Up 0.5c, thru New Jersey, July 26.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes.

Socony-Vacuum Oil Co.—Mobilgas:

Consumer t. c. was not advanced 1c, at Boston and Providence, July 14, as reported on page 60 of July 21 issue. Dealer t. w. only was up that date.

Cons. t. c. up 0.45c, Binghamton, July 9.

Dealer t. w. up 0.2c, Syracuse, July 9.

Cons. t. c. at Hartford has been 8.6c, instead of 9.1c, since Apr. 1, on which date it went up only 0.5c, instead of 1c, as reported on page 42 of Apr. 7 issue.

Atlantic Refining—Atlantic White Flash:

Harrisburg was included in the 0.5c advance of July 16, thru eastern Pennsylvania. Commercial t. c. price there was up 0.25c, dealer t. w. up 0.5c.

Dealer t. w. up 1c, Boston, Worcester and Providence, July 15.

Dealer t. w. up 0.5c, thru New Jersey and North Carolina, July 14.

Dealer t. w. up 0.5c, thru Maryland and Virginia, July 13.

Kerosine:

Up 0.25c, Providence, July 14.

Up 0.5c, thru New Jersey, July 9.

Up 0.5c, Baltimore, July 6.

Coastal

(*Continued from page* 56)

hand they reported that only a few cargoes were available for August-September lifting. One refiner said he had received a firm offer of 4.25 cents a gallon for a gas oil cargo but turned it down. Traders indicated that 4.125 cents might still be done in a few places.

Kerosine continued inactive. Some traders said that a cargo could be had at 4.875 cents, while others said nothing was available under 5 cents.

Crude Price Changes

(*Continued from page* 56)

high for the state — 55,211 barrels on daily average — was reached in July, 1935.

* * *

HOUSTON, July 26.—Effective July 6, Humble Oil & Refining Co. posted a price schedule on Saxet, Gulf Coastal Texas crude, at variance with prices for other Gulf Coast crudes, on the lower gravities. Prices on oil below 26 gravity were posted ranging from $1.01 for 20-20.9 gravity, to $1.11 for 25-25.9, with a 2-cent differential for each grade. The rest of the gravity and price schedule, up to 40 and above at $1.41 is the same as for other Gulf Coastal crudes. The new schedule for Saxet establishes a straight 2-cent differential for all gravities, while a 3 cent differential applies for other Gulf Coastal crudes on oils below 26 gravity, with the 2 cent differential beginning with 27-27.9 gravity. The new prices for Saxet amount to an advance of from 1 to 5 cents on oils below 26 gravity.

Republic Oil Co. Adds To Its Sales Staff

PITTSBURGH, July 26. — Gordon Thurber, formerly Tennessee state manager for Pure Oil Co., has joined the sales force of Republic Oil Co. He will make his headquarters for Republic in Atlanta and will cover the wholesale jobbing trade in Georgia, northern Florida and a portion of South Carolina.

H. C. Sanford, formerly bulk depot supervisor of Shell Petroleum Corp., of Des Moines, Ia., has recently been employed by Republic Oil Co., and effective immediately will be stationed in Pittsburgh for Republic. Sanford will be in charge of equipment for Republic Oil Co.

Tax Collections Off

By Teletype

WASHINGTON, July 27.—Collections of federal taxes on gasoline and lubricating oil slumped in June, according to the Internal Revenue Bureau. Gasoline taxes totaled $17,561,468 and "lube" oil taxes $2,950,212 in June, compared with $17,982,830 and $3,258,687 respectively, in June, 1936.

Statistical Guide

WASHINGTON, July 26.—A quick way to find the several thousand statistical series put out by U. S. governmental and other bureaus is furnished in the new publication "Sources of Current Trade Statistics," released by the Bureau of Foreign and Domestic Commerce, July 12.

The publication lists about 3000 series of statistical reports issued daily, weekly, monthly or quarterly by more than 240 governmental departments and commissions, trade associations, research organizations, trade magazines and newspapers.

S. O. Indiana Sales Executive Dies

N. P. N. News Bureau

CHICAGO, July 26.—H. A. Lewis, Chicago, assistant general manager of sales for Standard Oil Co. of Indiana, died at Passavant hospital July 25 after a brief illness. Funeral will be from St. Marys Episcopal church, Kansas City. Burial will be at Forest Hills cemetery.

Mr. Lewis was born at Lexington, Mo., in 1884 and joined the Indiana company in 1903 as a stenographer in the Kansas City office. Ten years later he was made assistant manager, then manager of the Kansas City office.

In 1921 he was made manager of the Chicago division. Shortly afterward he joined the general office as assistant manager of sales of the western division, and subsequently was promoted to assistant general manager of all sales divisions. Mrs. Lewis and one son, Hiram III, 22, survive.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	July 26	
District:	***60-64 Oct.**	***65 Oct. & Above**
N. Y. harbor	‡7.50 – 7.75	7.50 – 8.00
†N. Y. harbor	7.25 – 7.50	7.50 – 7.75
Philadelphia	7.50	7.75
Baltimore	7.50 – 7.75	7.75 – 8.00
Norfolk	7.50 – 7.75	7.75 – 8.00
Wilmington, N. C.	7.50 – 7.75	7.75 – 8.00
Charleston, S. C.	7.50 – 7.75	7.75 – 8.00
Savannah	7.25	7.50
Jacksonville	7.25	7.50
Portland	7.75	8.00
Boston	7.25 – 7.50	7.75 – 8.00
Providence	7.50	7.75 – 8.00

*Prices are nominal. †Barge lots. ‡Correction: Price on July 19 was 7.25-7.75, instead of 7.25-7.50, as published on page 61, July 21 issue.

WATER WHITE KEROSINE

District:			
N. Y. harbor	6.30	Charleston, S. C.	6.25
*N. Y. harb or	6.125	Savannah	6.25
Philadelphia	6.25	Jacksonville	6.25
Baltimore	6.25	Portland	6.75
Norfolk	6.25	Boston	6.40
Wilmington, N. C.	6.25	Providence	6.30

*Barge lots.

†FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	6.30	6.125
Nos. 2-3	5.25	5.125
No. 4	5.25	5.125
No. 5	$1.55 –$1.60	.....
No. 6	$1.35 –$1.40	.....

	Phila. dist.	Balt. dist.
No. 1	6.25	6.25
Nos. 2-3	5.00	5.25
No. 4	4.75 – 5.00	5.25
No. 5	$1.47 –$1.55	$1.55
No. 6	$1.30 –$1.35	$1.35

	Bost. dist.	Prov. dist.
No. 1	6.40	6.30
Nos. 2-3	5.40	5.30
No. 4	5.25 – 5.40	4.875– 5.125
No. 5	$1.55 –$1.60	.....
No. 6	$1.35	.....

†Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

District:	†Bunker C Fuel	†Diesel Oil
N. Y. harbor	*$1.35	**$2.20
Philadelphia	*$1.30 –$1.35	*$2.20
Baltimore	*$1.35	**$2.20
Norfolk	*$1.35	$2.20
Charleston	$1.30	$2.20
Savannah	*$1.30	$2.20
Jacksonville	*$1.30	$2.20
Tampa	*$1.30	$2.20
Portland	$1.45	$2.35
Boston	*$1.35	**$2.25
Providence	$1.35	$2.25

†In ships' bunkers.

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	5.25	5.25
Philadelphia dist.	5.00	....
Baltimore dist.	5.25	....
Norfolk dist.	5.25	....
Savannah dist.	....	5.25
Jacksonville dist.	....	5.25

*For barging add 5c per bbl.
**For barging add 6.5c per bbl.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	July 26	July 19
U. S. Motor, under 65 oct.	5.875– 6.00	5.50 – 5.75
400 e.p. blend 65 oct. & above	6.00 – 6.125	5.75 – 6.25
*38-40 w.w. kerosine	4.50 – 4.75	4.50 – 4.75
41-43 w.w. kerosine	4.75 – 5.00	4.75 – 5.00
44 w.w. kerosine	5.00	5.00

*150 fire point.

Prices Effective	July 26	July 19
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$1.15 –$1.26	$1.15 –$1.26
Diesel fuel, under 24°	$1.10 –$1.15	$1.10 –$1.15
*30-34 diesel (gas oil)	$1.25 –$1.35	$1.30 –$1.40
†Grade C fuel oil	$0.85 –$1.05	$0.85 –$1.05

Note: For San Francisco cargo prices, add 5c per bbl. to above cargo prices.

In Ships' Bunkers, or deep tank lots, per bbl.:

*Diesel fuel oil	$1.625–$1.65	$1.625–$1.65
†Grade C fuel oil	$1.075–$1.10	$1.075–$1.10

*Pacific specification 200. †Pacific specification 400.

Cased Goods: (Per case)		
U. S. Motor	$1.40 –$1.525	$1.40 –$1.525
400 e.p. blend, 65 oct. & above	$1.50 –$1.625	$1.50 –$1.625
*40-43 w.w. kerosine	$1.25 –$1.325	$1.25 –$1.325
Kerosine, p.w.	$1.20 –$1.30	$1.20 –$1.30

*150 fire point.

New York Export

(Prices in cents per gal. in bbls. F.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	28.50 –29.50	28.50 –29.50
Dark, 25 p.t.	28.00 –29.00	28.00 –29.00
Neutral oil:		
200 3 color, 25 p.t.	32.00 –33.00	32.00 –33.00
150 3 color, 25 p.t.	27.50 –28.50	27.50 –28.50
600 Warren E filtered	25.00 –26.00	25.00 –26.00
600 s.r., unfiltered	21.50 –22.50	21.50 –22.50
650 s.r., unfiltered	24.00 –25.00	24.00 –25.00
600 fl., s.r.	25.00 –26.00	25.00 –26.00
630 fl., s.r.	29.00 –30.00	29.00 –30.00

Wax, Domestic *and* Export

(Prices in cents per lb. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk. Scale, solid and fully refined, slabs in bags.)

Prices Effective	July 26	
	New York	
	Domestic	Export
124-6 Y.C. scale	2.85 – 2.90	2.85 – 2.90
122-4 W.C. scale	2.95 – 3.00	2.95 – 3.00
124-6 W.C. scale	2.95 – 3.00	2.95 – 3.00
123-5 Fully rfd.	4.45	4.375
125-7 Fully rfd.	4.55	4.50
128-30 Fully rfd.	4.80	4.75
130-2 Fully rfd.	5.05	5.00
133-5 Fully rfd.	†5.50	5.50
135-7 Fully rfd.	†5.75	5.75
	New Orleans	
	Domestic	Export
124-6 Y.C. scale	2.85 – 2.90	2.85 – 2.90
122-4 W.C. scale	2.95 – 3.00	2.95 – 3.00
124-6 W.C. scale	2.95 – 3.00	2.95 – 3.00
123-5 Fully rfd.	4.45	4.375
125-7 Fully rfd.	4.55	4.50
128-30 Fully rfd.	4.80	4.75
130-2 Fully rfd.	5.05	5.00
133-5 Fully rfd.	†5.50	5.50

†Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing opinions of traders, except prices specified to the contrary. Prices cover bulk shipments of 20,000 bbls. or more, unless otherwise noted.)

Prices Effective	July 26	July 19
For Domestic shipment:		
MOTOR GASOLINE		
59 oct. & below	*6.00 – 6.125	*6.00 – 6.125
60-64 oct. number	*6.25	*6.25
65 oct. & above	6.50 – 6.625	6.50 – 6.625
FUEL OILS		
No. 1	4.875– 5.00	4.875– 5.00
No. 2	4.125	4.125
No. 4	4.00	4.00
KEROSINE		
41-43 w.w.	4.875– 5.00	4.875– 5.00
For Export Shipment:		
GASOLINE		
U. S. Motor	6.125	6.0625
60-62, 400 e.p.	6.125	6.125
61-63, 390 e.p.	6.25	6.25
64-66, 375 e.p.	6.375	6.375

*Nominal.

Prices Effective	July 26	July 19
KEROSINE		
44 w.w.	5.00 – 5.125	5.00 – 5.125
41-43 w.w.	4.875– 5.00	4.875– 5.00
41-43 p.w.	4.875	4.875
GAS AND BUNKER OILS		
For Domestic and/or Export Shipment		
‡26-30 translucent gas oil	4.00 – 4.125	4.00 – 4.125
‡30 plus translucent gas oil	4.125– 4.25	4.125– 4.25
‡30 plus transparent gas oil	4.125– 4.25	4.125– 4.25
Diesel Oil Ship's bkrs.	†$1.90	†$1.90
Grade C bunker oil, for ship's bunkers	†$1.05	†$1.05
Grade C bunker oil, in cargoes	$0.95	$0.95

‡Less than ½ of 1% sulphur. †Barging 5c bbl. additional at some Gulf ports.

MEXICAN CRUDE AND BUNKER OILS
(F.o.b. Steamer, Tampico)

Heavy Panuco crude, taxes to be paid	*$1.35	*$1.35
Grade C bunker oil, ship's bunkers, taxes paid	$1.05	$1.05

MID-CONTINENT LUBRICATING OILS

(Prices in cents per gal. in bbls. f.a.s. Gulf oil terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 brt. stock	27.50	28.50
150-160 vis. D 210 brt. stock:		
0-10 p.p.	24.50	25.50
10-25 p.p.	24.00	25.00
25-40 p.p.	23.50	24.50
150-160 vis. E 210 brt. stock	23.50	24.50
120 vis. D 210 brt. stock	22.50	23.50
180 vis. No. 3 color neutral:		
0-10 p.p.	16.50	16.50
15-30 p.p.	16.00	16.00
200 vis. No. 3 color neutral:		
0-10 p.p.	17.00	17.00
15-30 p.p.	16.50	16.50
600 s.r. olive green	12.50	12.50
600 s.r. dark green	11.00	11.00
631 s.r.	22.50	23.00

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° F., pour point 0. Tanker, f.o.b. Gulf oil terminals, for export shipment.)

Unfiltered Pale Oils:			
Vis.	**Color**		
100	No. 3	5.50 – 5.75	5.50 – 5.75
200	No. 3	7.25 – 7.50	7.25 – 7.50
300	No. 3	7.75 – 8.00	7.75 – 8.00
500	No. 3½	8.50 – 8.75	8.50 – 8.75
750	No. 4	9.25 – 9.50	9.25 – 9.50
1200	No. 4	9.75 –10.00	9.75 –10.00
2000	No. 4	10.25 –10.50	10.25 –10.50
Red Oils:			
Vis.	**Color**		
100	No. 5-6	5.50 – 5.75	5.50 – 5.75
200	No. 5-6	7.25 – 7.50	7.25 – 7.50
300	No. 5-6	7.75 – 8.00	7.75 – 8.00
500	No. 5-6	8.50 – 8.75	8.50 – 8.75
750	No. 5-6	9.25 – 9.50	9.25 – 9.50
1200	No. 5-6	9.75 –10.00	9.75 –10.00
2000	No. 5-6	10.25 –10.50	10.25 –10.50

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 lbs., British sterling; to U. S. ports in cents per bbl.)

Rates Effective July 26

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.‡	28/6	23/-25/	27/	27/-28/
Aruba-U.K./Cont.‡	20/	21/-22/	24/	24/-25/
Gulf-N. Atlantic** (not E. of N. Y.):				
Hvy. Crude & Fuel, (10 to 19.9 gravity)	*43c	*43c	....	....
Light Crude, (30 Grav. or Lighter)	††40c	40c	....	....
Gasoline	....	....	45c	*45c
Kerosine	....	....	46c	*46c
Light Fuel	....	....	47c	*47c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

*Nominal.

‡Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate; Tampico 2c to 3c per bbl. additional.

††For 20-29.9 Gravity. On July 19, last paid rate covered 20-25 gravity crude.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency

(Effective June 7, 1937, except Corning Jan. 29, 1937)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$2.57
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$2.52
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$2.37
Corning Oil in Buckeye Pipe Lines (Ohio)....$1.42

Posted by Other Companies

Tide Water Pipe Co., Ltd.
Bradford-Allegany district (Penna. and N. Y.) (Effective June 7, 1937).....$2.82
*The Pennzoil Co.: (Effective June 7, 1937)
Penna. Grade Oil in National Transit Lines*$2.82
Ashland Oil & Transportation Co.:
Somerset Oil in Ashland Lines (Ky.): (Effective Jan. 28, 1937)
Big Sandy River.....$1.42
Kentucky River.....$1.50

*The Pennzoil Co. posts $2.82 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields; prices in other lower districts range down to $2.77 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.

Midland, Midland County (July 23, 1937)...$1.27

Posted by Simrall Pipe Line Corp.

(Effective July 22, 1937)
West Branch, Arenac, and equal grades.....$1.09
(Effective July 23, 1937)
Beaverton, Crystal, Greendale, Porter and equal grades.....$1.27
Buckeye.....$1.245
(Effective July 1, 1937)
Billings and Tobacco.....$1.395

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.

(Effective Jan. 28, 1937)

Illinois, Princeton.....$1.35
Lima.....$1.25
Owensboro (Western Ky.).....$1.40

Posted by Stoll Oil Refining Co.

(Effective Feb. 1, 1937)

Stoll Pipe Line Oil (Ky.).....$1.40

CANADIAN FIELDS

Posted by Imperial Oil Limited

Western Ontario

(Effective Sept. 9, 1933)

Petrolia.....$2.10
Oil Springs.....$2.17

Alberta—Turner Valley

(Prices f.o.b. field tankage)
(Effective Dec. 16, 1936)

Clear Naphtha.....$2.60

Crude Oil & Discolored Naphtha

40-40.9°	$1.55	53-53.9	$1.94
41-41.9	1.58	54-54.9	1.97
42-42.9	1.61	55-55.9	2.00
43-43.9	1.64	56-56.9	2.03
44-44.9	1.67	57-57.9	2.06
45-45.9	1.70	58-58.9	2.09
46-46.9	1.73	59-59.9	2.12
47-47.9	1.76	60-60.9	2.15
48-48.9	1.79	61-61.9	2.18
49-49.9	1.82	62-62.9	2.21
50-50.9	1.85	63-63.9	2.24
51-51.9	1.88	64-64.9	2.27
52-52.9	1.91	65° & higher, for discolored naphtha only	2.36

Note: Clear naphtha: 22 color; 10 lbs. vapor pressure, Reid method; 90% recovery; end point, 410°. Discolored naphtha: same specifications as for clear naphtha except color.

MID-CONTINENT

Posted by Stanolind Crude Oil Purchasing Co., Jan. 28, 1937

	(In Oklahoma-Kansas)	(In North-North Central Texas)
Below 29	$1.06	$0.96
29-29.9	1.08	0.98
30-30.9	1.10	1.00
31-31.9	1.12	1.02
32-32.9	1.14	1.04
33-33.9	1.16	1.06
34-34.9	1.18	1.08
35-35.9	1.20	1.10
36-36.9	1.22	1.12
37-37.9	1.24	1.14
38-38.9	1.26	1.16
39-39.9	1.28	1.18
40 & above	1.30	1.20

Above Stanolind prices met as follows:
Jan. 28, Continental Oil Co. met in Okla., Kans., and North Texas. Sinclair-Prairie met in North Texas and North Central Texas. Jan. 28, Stanolind's North Texas schedule. Same date, The Texas Co. met in North-North Central Texas.

Note: Stanolind prices in Okla.-Kans. are for quantities computed by 97% tank tables. In Texas, 99% tank tables are used, volume corrected to 60° F., and deduction for full b.s. & w. content.

Posted by Carter Oil Co.

In Oklahoma

(Effective Jan. 28, 1937)

Below 25	$0.98	33-33.9	$1.16
25-25.9	1.00	34-34.9	1.18
26-26.9	1.02	35-35.9	1.20
27-27.9	1.04	36-36.9	1.22
28-28.9	1.06	37-37.9	1.24
29-29.9	1.08	38-38.9	1.26
30-30.9	1.10	39-39.9	1.28
31-31.9	1.12	40 and above	1.30
32-32.9	1.14		

Above Carter schedule met Jan. 28 by the following companies: Sinclair-Prairie, Shell and Barnsdall in Oklahoma-Kansas; Skelly Oil in Kansas; Tide Water in Oklahoma; Pure Oil in Oklahoma-Kansas, beginning with below 24 at $0.98 and ending with 40 & above at $1.30.

Posted by Magnolia Petroleum Co.

(Effective Jan. 28, 1937)

In Oklahoma, same schedule as Carter Oil, which see above, beginning with below 25, at $0.98 and ending with 40 & above, at $1.30.

In Texas: North and North Central, including Burkburnett, Archer, Henrietta, Electra, Comanche and Olden, same gravity and price schedule as Stanolind in North Texas, which see under Stanolind, beginning with below 29 at $0.96 and ending with 40 and above, at $1.20.

Posted by Humble Oil & Refining Co.

TEXAS FIELDS

(*West Central Texas)

(Effective Jan. 28, 1937)

Below 29	$0.96	35-35.9	$1.10
29-29.9	0.98	36-36.9	1.12
30-30.9	1.00	37-37.9	1.14
31-31.9	1.02	38-38.9	1.16
32-32.9	1.04	39-39.9	1.18
33-33.9	1.06	40 and above	1.20
34-34.9	1.08		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young counties.

Shell Petroleum Corp., effective Jan. 28, posts Humble's above schedule on Fisher county crude, plus these five lower grades, beginning with below 25 gravity at $0.88; 25-25.9, $0.90; 26-26.9, $0.92; 27-27.9, $0.94, and 28-28.9, $0.96; rest of schedule same as Humble's in West Central Texas.

†Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F.

*East Central Texas

(Effective Jan. 28, 1937)

Below 29	$1.03	35-35.9	$1.17
29-29.9	1.05	36-36.9	1.19
30-30.9	1.07	37-37.9	1.21
31-31.9	1.09	38-38.9	1.23
32-32.9	1.11	39-39.9	1.25
33-33.9	1.13	40 and above	1.27
34-34.9	1.15		

*Including Anderson, Cherokee, Limestone, Navarro counties.

Same date, Sinclair-Prairie met in Mexia Humble's above schedule.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

	Gray County	Carson-Hutchinson
Below 35	$0.96	$0.91
35-35.9	0.98	0.93
36-36.9	1.00	0.95
37-37.9	1.02	0.97
38-38.9	1.04	0.99
39-39.9	1.06	1.01
40 & above	1.08	1.03

Jan. 28, above prices met by Sinclair-Prairie and Magnolia in the entire area and by Continental in Carson-Hutchinson and by Texas Co. in Panhandle Sweet, same as Humble's Gray Co. and on Panhandle Sour, same as Carson-Hutchinson.

EAST TEXAS

(Effective May 22, 1937)
Stanolind, Humble, Shell, Sinclair-Prairie, Texas Co., and Magnolia.....$1.35

Shell also posted on Jan. 28, in Livingston area, Polk County, Texas, $1.27.

NORTHEAST TEXAS

(Posted by Humble, Jan. 28, 1937)

Talco.....$0.73

(Posted by Magnolia, Jan. 28, 1937)

Cass County and Panola County, Tex:
Same gravity and price schedule as S. O. Louisiana posts for Rodessa, La., which see under that company.

(*Posted by The Texas Co., Jan. 28, 1937*)

Cass County.....$1.25

WEST TEXAS AND NEW MEXICO

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

(Including Andrews, Crane, Crockett, Ector, Glasscock, Howard, Winkler and Upton Counties, Texas and Lea county, New Mexico).

Below 26	$0.78	33-33.9	$0.94
26-26.9	0.80	34-34.9	0.96
27-27.9	0.82	35-35.9	0.98
28-28.9	0.84	36-36.9	1.00
29-29.9	0.86	37-37.9	1.02
30-30.9	0.88	38-38.9	1.04
31-31.9	0.90	39-39.9	1.06
32-32.9	0.92	40 & above	1.08
Pecos, West Texas			$0.91

Jan. 28, Magnolia met Humble in Crane, Upton, Howard, Glasscock, Mitchell and Winker.

Shell Petroleum Corp., on Jan. 28, met Humble in Crane, Glasscock, Howard, Pecos (except Yates shallow pool), Winkler, and Upton counties, Tex., and in Lea County, N. Mex. On Jan. 28, Shell posted in Yates shallow pool in Pecos county, Tex., $0.81. June 4, 1937, Shell added Ector county to West Texas postings.

Jan. 28, Stanolind Oil & Gas Co. met Humble in Hendrick field, Winkler county.

Jan. 28, Texas Co. met Humble in Ward and Winkler counties, Tex., and Lea County, N. M.

April 20, 1937, Sinclair Prairie met Humble in Ward and Winkler, Tex. and Lea, N. M., counties, except that its gravity schedule ends with 36 and above, at $1.00.

Posted by Continental Oil Co.

(Effective Jan. 28, 1937)

Artesia, Jackson and Maljamar pools, N. M...$0.90

COLORADO

(Posted by Continental Oil Co., Effective Jan. 28, 1937)

Ft. Collins and Wellington

Below 29	$1.01	35-35.9	$1.15
29-29.9	1.03	36-36.9	1.17
30-30.9	1.05	37-37.9	1.19
31-31.9	1.07	38-38.9	1.21
32-32.9	1.09	39-39.9	1.23
33-33.9	1.11	40 & above	1.25
34-34.9	1.13		

Cannon City and Florence, Col.....$1.10

SOUTH AND SOUTHWEST TEXAS

Posted by Humble Oil & Refining Co.

(Effective Jan. 28, 1937)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski fields.....$1.09
Pettus.....$1.37 Van Zandt.....$1.10

(Effective Nov. 1, 1936)

Heyser heavy...$0.90 Placedo heavy..$0.90
Heyser light.....1.15 Taft.....0.95

Shell Pet. Corp. on Jan. 28, posted $1.09 in Salt Flat district, Tex.

Anahuac, Dickinson, Flour Bluff and Turtlebay

(Effective Jan. 28, 1937)

Below 31	$1.16	36-36.9	$1.28
31-31.9	1.18	37-37.9	1.30
32-32.9	1.20	38-38.9	1.32
33-33.9	1.22	39-39.9	1.34
34-34.9	1.24	40 and above	1.36
35-35.9	1.26		

Jan. 28, Magnolia met Humble in Darst Creek; posted $1.00 in Luling; $1.12 in Lytton Springs; $1.27 for Cleveland, Liberty county, Tex.; $1.15 in Hardin, Liberty county, Tex.

Jan. 28, 1937, The Texas Co. met Humble in Darst Creek.

Posted by Humble

Conroe, Raccoon Bend, Tomball and Satsuma

(Deep sand crudes)
(Effective Jan. 28, 1937)

Below 29	$1.20	35-35.9	$1.34
29-29.9	1.22	36-36.9	1.36
30-30.9	1.24	37-37.9	1.38
31-31.9	1.26	38-38.9	1.40
32-32.9	1.28	39-39.9	1.42
33-33.9	1.30	40 & above	1.44
34-34.9	1.32		

Jan. 28, Magnolia met Humble in Tomball and Texas Co. met Humble in Conroe, beginning with 35-35.9 gravity.

Posted by Humble

Mirando, Heavy and Light

(Effective July 6, 1937)

Below 21	$0.96	31-31.9	$1.18
21-21.9	0.98	32-32.9	1.20
22-22.9	1.00	33-33.9	1.22
23-23.9	1.02	34-34.9	1.24
24-24.9	1.04	35-35.9	1.26
25-25.9	1.06	36-36.9	1.28
26-26.9	1.08	37-37.9	1.30
27-27.9	1.10	38-38.9	1.32
28-28.9	1.12	39-39.9	1.34
29-29.9	1.14	40 & above	1.36
30-30.9	1.16		

July 6, Magnolia posted same schedule as Humble in Mirando.

July 6, 1937, Texas Co. posted for Duval-Mirando, $0.96 for below 21, plus 2c differential, to $1.12 for 28 & above.

(*Continued on next page*)

CRUDE OIL MARKETS

(Continued from preceding page)

NORTH LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Jan. 28, 1937)

(In Caddo, Homer, Haynesville, Sabine, De Soto, Sarepta, Carterville, El Dorado, Bunkie, and Miller county).

Below 25	$0.90	33-33.9	$1.08
25-25.9	0.92	34-34.9	1.10
26-26.9	0.94	35-35.9	1.12
27-27.9	0.96	36-36.9	1.14
28-28.9	0.98	37-37.9	1.16
29-29.9	1.00	38-38.9	1.18
30-30.9	1.02	39-39.9	1.20
31-31.9	1.04	40 and above	1.22
32-32.9	1.06		

Rodessa, La.

(Effective Jan. 28, 1937)

Below 25	$0.93	33-33.9	$1.11
25-25.9	0.95	34-34.9	1.13
26-26.9	0.97	35-35.9	1.15
27-27.9	0.99	36-36.9	1.17
28-28.9	1.01	37-37.9	1.19
29-29.9	1.03	38-38.9	1.21
30-30.9	1.05	39-39.9	1.23
31-31.9	1.07	40 and above	1.25
32-32.9	1.09		

Choctaw and Darrow

Jan. 28, 1937, initial posting; same schedule as Humble posts in Mirando, Tex., which see.

Smackover, Ark.	$0.90
Urania, La. (La. Oil Refg. Co., Jan. 10, '36)	0.97
Tepetate, La. (Continental Oil, Jan. 28, '37)	1.24

Jan. 28, 1937, Magnolia met S. O. La.'s No. La.-Ark. gravity and price schedule in Pine Island, Haynesville, Bull Bayou and Cotton Valley, La., and in Eldorado and Rainbow districts, Ark.; and met S. O. La.'s Rodessa prices; and in Lockport, Iowa, Cameron Meadow, La., posted Humble's gravity and price schedule on Mirando.

Jan. 28, The Texas Co. met S. O. La. in N. La., except that its gravity schedule begins with below 27 at $0.94. It posted $1.37 for Garden Island, La., $1.24 for LaFitte, La. and $0.90 for Smackover.

*GULF COASTAL FIELDS

Posted by Humble Oil & Refining Co. and The Texas Co.

	(Effective Jan. 28, 1937) Humble	Texas	Saxet (Humble) (July 6 '37)
Below 18	$0.95	$0.90	....
18-18.9	for	0.92	....
19-19.9	below	0.94	....
20-20.9	21°	0.96	$1.01
21-21.9	0.98	0.98	1.03
22-22.9	1.01	1.01	1.05
23-23.9	1.04	1.04	1.07
24-24.9	1.07	1.07	1.09
25-25.9	1.10	1.10	1.11
26-26.9	1.13	1.13	1.13
27-27.9	1.15	1.15	1.15
28-28.9	1.17	1.17	1.17
29-29.9	1.19	1.19	1.19
30-30.9	1.21	1.21	1.21
31-31.9	1.23	1.23	1.23
32-32.9	1.25	1.25	1.25
33-33.9	1.27	1.27	1.27
34-34.9	1.29	1.29	1.29
35-35.9	1.31	for	1.31
36-36.9	1.33	oil	1.33
37-37.9	1.35	34°	1.35
38-38.9	1.37	and	1.37
39-39.9	1.39	above.	1.39
40 and above	1.41	....	1.41

Effective Dec. 1, 1934, Humble prices are based on 99% tank tables at 60F. Allowance or deduction of 1% is made for each 25° change in temperature above or below 60F

*Includes these fields: Barbers Hill, Goose Creek, Hull, Humble, Liberty, Moss Bluff, Mykawa, Orange, Pierce Junction, Plymouth, Rabbs Ridge, Raccoon Bend (shallow sand), Refugio light and †heavy, Sour Lake, Spindletop, Sugarland and West Columbia. †Except these grades of Refugio heavy: effective July 6, 1937: Below 20, $0.95; 20-20.9, $1.01; 21-21.9, $1.03; 22-22.9, $1.05; 23-23.9, $1.07; 24-24.9, $1.09; and 25-25.9, $1.11; rest of schedule same as other Gulf Coastal crude.

Jan. 28, Sinclair-Prairie met above Humble schedule in full

July 6, 1937, The Texas Co. posted for Refugio: $1.01 for below 21, plus 2c differential, to $1.17 for 28 & above.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Jan. 28, 1937)

Salt Creek, Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma, Kansas which see under Mid-Continent crude on previous page.

Greybull-Torchlight	$1.30
Iles, light, Col.	1.18
Iles, heavy	1.12
Hogback, N. M.	1.33
Big Muddy	1.23
Elk Basin, light	1.30
Grass Creek, light	1.30
Frannie light	0.82

(Effective Nov. 4, 1936)

Grass Creek, heavy	$0.62
Frannie heavy	0.62
Hamilton Dome, Wyo	0.57

Pondera, Mont., (Postings discontinued July 1, 1936, but Stanolind pays price posted by Ohio Oil for Kevin-Sunburst, less 20c per bbl.)

Posted by Ohio Oil Co.

(Effective Jan. 28, 1937)

Elk Basin, Wyo.	$1.30
Grass Creek, light	1.30
Rock Creek	1.205
Lance Creek	0.97
Sunburst, Mont.	1.20

Posted by *International Refg. Co.

Cut Bank, Mont.

(Effective Jan. 28, 1937)

Below 35°	$1.34	38-38.9	$1.42
35-35.9	1.36	39-39.9	1.44
36-36.9	1.38	40 and above	1.46
37-37.9	1.40		

*Texas Co. subsidiary.

Posted by Continental Oil Co.

(Effective Jan. 28, 1937)

Cat Creek, Mont.	$1.40
Big Muddy, Wyo.	1.18
Lance Creek, Wyo.	0.97

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936, and Elk Hills, effective June 22, 1936

Gravity	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills **Midway-Sunset	Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge
14-14.9	$0.80	0.79	0.74	0.78	0.79	0.80	0.76	....	....	0.80	0.76	0.76	0.77	0.78	....	0.70	....	0.70	0.70	0.65	0.70	0.70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	.65	.70	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	.65	.70	.70	....
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	.65	.70	.70	....
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70		.70	.70	.65	.70	.70	
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	.70	.74	.74	.66	.74	.71	.70
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....		.70	.78	.78	.68	.78	.72	.70
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.82	.82	.71	.82	.74	.70
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.87	.87	.74	.86	.78	.72
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.92	.92	.77	.90	.82	.76
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.97	.97	.80	.94	.86	.79
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	1.01	1.01	.83	.98	.90	.83
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	1.06	1.06	.86	1.02	....	....
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	1.10	1.10	.88	1.06	....	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	1.15	1.15	.91	1.10	....	....
29-29.9	1.17	1.15	.93	1.18	1.18		1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	1.20	1.20	.94	1.14	....	....
30-30.9	1.21	1.19	.95	1.22	1.21		1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	1.25	1.25	.97	1.18	....	....
31-31.9				....	1.24		1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	1.29	1.29	.99			
32-32.9		*Elwood Terrace		....	1.27		1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.34	1.34	1.02	Kettleman Hills		
33-33.9	....	1.28	....	....	....		....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.38	1.38	1.04	....	1.19	....
34-34.9	....	1.32	....	....	....		....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	....	....	1.23	....
35-35.9	....	1.35	....	....	....		....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	....	....	1.27	....
36-36.9	....	1.39	....	....	....		....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	....	....	1.31	....
37-37.9	....	1.43	....	....	....		....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	....	....	1.35	....
38-38.9	....	....	....	....	....		....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	....	....	1.39	....
39-39.9	....	....	....	....	....		....	1.61	....	....	....	....	1.40	....	....	....	....	....	....	....	....	1.43	....
40-40.9	....	....	....	....	....		....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	....	....	....	....

F.O.B. Standard Pipe Line

*F. o. b. ship.

‡Also McKittrick, Kern River, Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted. **Except Lakeview Area.

CLASSIFIED

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Coming Meetings

General Expositions

The Greater Texas and Pan American Exposition, Dallas, June 12 to Oct. 31.

The Great Lakes Exposition, Lake Front, Cleveland, Ohio, May 29 to Sept. 6.

Oil Meetings—Expositions

Third Michigan Oil and Gas Exposition, Exposition Park, Mt. Pleasant, Mich., Aug. 10 to 15.

American Chemical Society, Rochester, N. Y., Sept. 6 to 10.

Kentucky Petroleum Marketers Assn., Annual Fall Conference and Golf Tournament, Louisville, Sept. 7 and 8.

Third Annual Bituminous Conference, Glacier National Park, Mont., Sept. 7, 8 and 9.

North American Gasoline Tax Conference, San Francisco, Calif., Sept. 13 to 16.

National Petroleum Assn., annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 15, 16 and 17.

Society of Automotive Engineers, regional tractor meeting, Mayflower Hotel, Akron, Ohio, Sept. 15, 16 and 17.

Pacific Oil Show and Black Gold Festival, Taft, Calif., Sept. 16 to 19.

Gasoline Pump Manufacturers Assn., Edgewater Beach Hotel, Chicago, Sept. 21, 22.

Oil Trades Assn. of New York, Sports Outing, Pelham Country Club, Pelham Manor, N. Y., Sept. 21.

National Assn. of Petroleum Retailers, fifth national convention, Powers Hotel and Exposition Park, Rochester, N. Y., Sept. 27 to Oct. 1.

American Gas Assn., 19th annual convention, Cleveland, Ohio, Sept. 27 to Oct. 1.

Society of Automotive Engineers, regional transportation meeting, Blackstone Hotel, Chicago, Ill., Sept. 29, 30 and Oct. 1.

Society of Automotive Engineers, Fuel and Lubricants Regional meeting, Mayo Hotel, Tulsa, Okla., Sept. 30 and Oct. 1.

Chicago Exposition of Power and Mechanical Engineering, New International Amphitheatre, Chicago, Ill., Oct. 4 to 9.

Ohio Petroleum Marketers Assn., fall conference, Hotel Carter, and golf tournament, Westwood Country Club, Cleveland, Oct. 6 and 7.

Society of Automotive Engineers, National Aircraft Production meeting, Ambassador Hotel, Los Angeles, Calif., Oct. 7, 8 and 9.

26th National Safety Congress and Exposition, Kansas City, Mo., Oct. 11 to 15.

National Oil Marketers Assn., Stevens Hotel, Chicago, Ill., Oct. 12, 13 and 14.

Oil-World Exposition, Inc., Houston, Texas, Oct. 11 to 16.

25th Annual Conference on Taxation, auspices New England State Tax Officials Association, Hanover, N. H., Oct. 15 and 16.

Independent Petroleum Assn., of America, Houston, Texas, Oct. 14, 15 and 16.

American Assn. of Petroleum Geologists, midyear meeting, William Penn Hotel, Pittsburgh, Pa., Oct. 14, 15 and 16.

Michigan Petroleum Assn., Traverse City, Mich., Oct. 21 and 22.

National Tax Assn., 30th annual conference, The Lord Baltimore Hotel, Baltimore, Md., Oct. 25 to 28.

Indiana Independent Petroleum Assn., annual convention, Hotel Severin, Indianapolis, Oct. 27, 28.

Society of Automotive Engineers, annual dinner, Commodore Hotel, New York City, Oct. 28.

Mid-Continent Oil & Gas Assn. of Texas, annual meeting and convention, Dallas, Texas, Oct. 29 and 30.

National Automobile Show, Grand Central Palace, New York City, Oct. 27 to Nov. 3.

American Petroleum Institute, 18th annual meeting, Stevens Hotel, Chicago, Ill., Nov. 9 to 12.

Oil Trades Assn. of New York, New York, Nov. 16.

National Asphalt Conference, Memphis, Tenn., week of Dec. 6.

Exposition of Chemical Industries, Grand Central Palace, New York, N. Y., Dec. 6 to 11.

Society of Automotive Engineers, National Production meeting, Hotel Durant, Flint, Mich., Dec. 8, 9 and 10.

Nebraska Petroleum Marketers, Inc., Omaha, Nebr., Dec. 7, 8 and 9.

American Chemical Society, Division Organic Chemistry, Richmond, Va., Dec. 28, 29 and 30.

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American Assn. of Petroleum Geologists, 23rd annual meeting, Roosevelt Hotel, New Orleans, La., March 16 to 18.

International Petroleum Exposition, Tulsa, Okla., May 14 to 21.

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Dealer Contact Crews Prove Successful

LOS ANGELES, July 26.—Additional evidence of the increasing interest in dealer development programs among the larger oil companies is found in the Associated division of Tide Water Associated Oil Co. on the west coast.

After two years of successful experimental work with its dealer development crew, this company has increased its dealer contact to three crews.

The crews consisting of two men each with a specially equipped automobile, are constantly in the field contacting dealers and offering them assistance in merchandising and selling petroleum products and accessories. In many instances the crew not only materially assists the dealer in the improvement of his station, its appearance and methods of selling, but actually does the manual work in making such improvements.

The three crews are to operate by territories, one in Oregon and Washington, one in northern California, and the third in southern California.

On European Trip

NEW YORK, July 26. — George D. Locke, formerly vice-president of Barnsdall Oil Co., sailed July 24 on an European business trip and will return to the U. S. at the end of August. Mr. Locke is now located in New York and has an office at 111 Broadway.

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NATIONAL PETROLEUM NEWS

AUGUST 4, 1937

Pair of 0.38s Factor in Price of 'Gas'

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still paying LOSS penalties?

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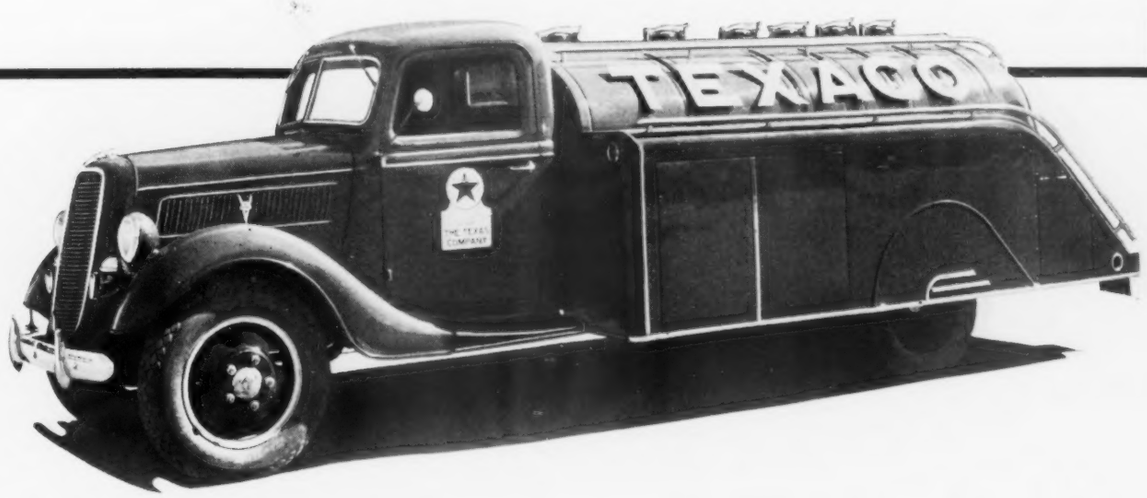

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ELLICK BOTTS

Here's Ellick Botts, the consulting pumper of Gray Horse, Okla., at his desk surrounded with work. His contributions to National Petroleum News, in the form of Letters to the Editor, have driven many a point on current issues home to readers more sharply than could be done in news or editorial columns. Mr. Botts stands aside for no man, from editor down to office boy; but he will endorse checks made out to Lawrence E. Smith and he also serves as manager of N.P.N.'s Mid-Continent News Bureau.